



# **PRINT CONTROLLER X4(AR-PE1) INSTALLATION AND SERVICE GUIDE**

for Sharp digital full color copiers

A guide for service technicians



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## About this guide

## Preface

The *Installation and Service Guide* is intended for certified Print Controller X4(AR-PE1)<sup>™</sup> and copier service technicians installing or servicing the Print Controller X4(AR-PE1) Color Server. If you have not received installation and service certification, you should not attempt to install or service the Print Controller X4(AR-PE1) Color Server. Electronics For Imaging does not warrant the performance if installed or serviced by non-certified personnel.

## About this guide

This guide is divided into the following topics:

- “Preface”  
General information about this guide and about installing the Print Controller X4(AR-PE1)
- Chapter 1, “Introduction”  
General information about the Print Controller X4(AR-PE1)
- Chapter 2, “Preparing for Installation”  
Unpacking and steps to take before installing the unit
- Chapter 3, “Connecting the Print Controller X4(AR-PE1)”  
Connect the Print Controller X4(AR-PE1) to the copier and the network, and verifying that the system is working correctly; overview of the Control Panel
- Chapter 4, “Service Procedures”  
Removal and replacement procedures for Print Controller X4(AR-PE1) components
- Chapter 5, “Troubleshooting”  
Common problems and their solutions; startup error codes

**NOTE:** Print Controller X4(AR-PE1) customers should not use the technical service documentation. Please don't leave your copy of the *Installation and Service Guide* behind after you make a service call.

## About the illustrations in this guide

The illustrations in this guide reflect the current shipping version of the Print Controller X4(AR-PE1) at the time of publication. Components shown in these illustrations are subject to change. To receive information about any Print Controller X4(AR-PE1) components that do not match the illustrations in this guide, contact your authorized service/support center.

## Preface

### Terminology and conventions

The term “network administrator” refers to the person responsible for maintaining the network at the customer site.

The term “Control Panel” refers to the area on the front of the Print Controller X4(AR-PE1) including the green/red activity light, the display window (LCD—liquid crystal display), and the buttons on the sides of the display window.

The term “system software” refers to the software installed on the Print Controller X4(AR-PE1) hard disk drive.

References to other Print Controller X4(AR-PE1) manuals, such as the *Configuration Guide*, are displayed in italics.

**NOTE:** The note format highlights important messages and additional information.



The caution icon indicates a need for special care and safety when handling the equipment.

Print Controller X4(AR-PE1) Control Panel screen messages and commands referred to in the text of this manual appear in the Officina Sans typeface.

## Precautions

## Precautions

Always observe the following general precautions when installing and servicing the Print Controller X4(AR-PE1):

**1. Report any shipping damage.**

If there is any evidence of shipping or handling damage to the Print Controller X4(AR-PE1) packing boxes or their contents, save the damaged boxes and parts, call the shipper immediately to file a claim, and notify your authorized service/support center.

**2. Never alter an existing network without permission.**

The Print Controller X4(AR-PE1) will probably be connected to an existing Local Area Network (LAN) based on Ethernet or Token Ring hardware. The network is the link between the customer's computer, existing laser printers, and other prepress equipment. Never disturb the LAN by breaking or making a network connection, altering termination, installing or removing networking hardware or software, or shutting down networked devices without the knowledge and express permission of the system or network administrator or the shop supervisor.

**3. Never enter an IP address in Print Controller X4(AR-PE1) Network Setup.**

Only the network administrator should enter an IP address on a network device. Assigning the Print Controller X4(AR-PE1) an incorrect IP address may cause unpredictable errors on any or all devices connected to the network.

**4. Handle the Print Controller X4(AR-PE1) Control Panel display window with care.**

The Print Controller X4(AR-PE1) display window is made of glass. If the glass breaks and the liquid crystal inside leaks out, avoid contact with it. If you do come in contact with the liquid crystal, wash it off with soap and water immediately.

**5. Avoid pressing the surface of the display window.**

Applying pressure to the display window will cause it to change color.

**6. Use a soft cloth moistened with isopropyl or ethyl alcohol to clean the surface of the Print Controller X4(AR-PE1) display window.**

Other solvents, such as water, may damage the polarizer on the display window.

## Preface

**7. Use care when handling parts of the Print Controller X4(AR-PE1) as some edges on the unit may be sharp. For example, be careful when:**

- Accessing the CD-ROM and ZIP drives (keep the drive door closed when not in use)
- Plugging in cables at the back of the unit
- Using the power switch to power on/off the unit

**8. Follow standard ESD (electrostatic discharge) precautions while working on the internal components of the Print Controller X4(AR-PE1).**

Static is always a concern when servicing electronic devices. It is highly unlikely that the area around the copier and the Print Controller X4(AR-PE1) is static-free. Carpeting, leather-soled shoes, synthetic clothing fibers, silks, and plastics may generate a static charge of more than 10,000 volts. Static discharge is capable of destroying the circuits etched in silicon microchips, or dramatically shortening their life span. By observing standard precautions, you may avoid extra service calls and save the cost of a new board.

When possible, work on a ground-connected antistatic mat. Wear an antistatic grounding strap, grounded at the same place as the antistatic mat. If that is not possible:

- Attach a grounding strap to your wrist. Attach the other end to a good ground.
- When you unpack the Print Controller X4(AR-PE1) from the carton for the first time, touch a metal area of the copier to discharge the static on your body.
- Before you remove the Print Controller X4(AR-PE1) side panel and before you handle internal components, touch a metal part of the Print Controller X4(AR-PE1).
- Leave new electronic components inside their antistatic bags until you are ready to install them. When you remove components from an antistatic bag, place them on a grounded antistatic surface, component-side up.
- When you remove an electronic component, place it into an antistatic bag immediately. Do not walk across a carpet or vinyl floor while carrying an unprotected board.

**9. Handle printed circuit boards by their edges only, but avoid touching the contacts on the edge of the board.**

**10. Never set a cup of coffee—or any liquid—on or near the Print Controller X4(AR-PE1) or the copier.**

## **Tools you will need**

## **Tools you will need**

To install or service the Print Controller X4(AR-PE1), you should bring the following tools and parts:

- ESD wrist grounding strap and antistatic mat
- Wire cutters
- #2 Phillips head screwdrivers (non-magnetic)
- Flashlight
- PROM extractor

You should also bring this guide and any technical notes for the Print Controller X4(AR-PE1).





# 1 Features

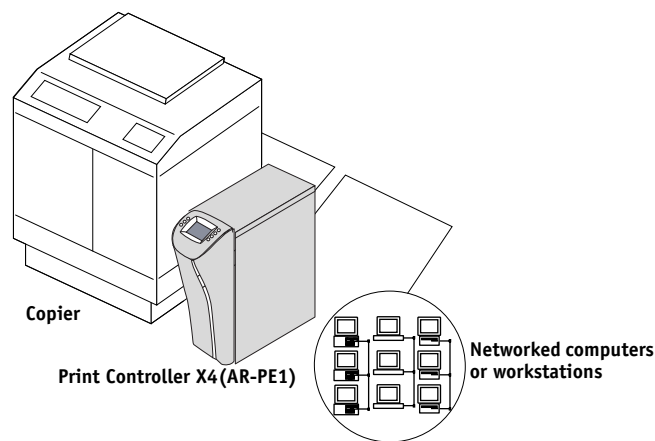
## Chapter 1: Introduction

The Print Controller X4(AR-PE1) Color Server adds computer connectivity and highly efficient Adobe PostScript 3 color printing capability to color copiers. It is optimized for high-speed network communications, processing, rasterization, and printing of continuous tone color and monochrome pages.

### Features

The Print Controller X4(AR-PE1), as an integral part of a color printing system, enables users to:

- Send images over AppleTalk, TCP/IP, and Novell networks to print on supported Print Controller X4(AR-PE1) devices.
- Spool print jobs and select a printing priority for each job. Users can control spooled print jobs sent to the Print Controller X4(AR-PE1) with remote user software running on networked PC and Mac OS computers.
- Print files in color, grayscale, and black and white.
- Use the copier as a high-resolution color scanner with Fiery Scan software.
- Use 136 resident PostScript fonts (126 Adobe Type 1 PostScript, and 10 TrueType), plus two Adobe Multiple Master fonts used for font substitution when printing PDF files. Fiery Downloader or any third-party LaserWriter downloader, such as the Adobe Font Downloader, can be used to download additional fonts.
- Use built-in ColorWise™ color management and NetWise™ network features.



**FIGURE 1-1** Print Controller X4(AR-PE1) printing system

The Print Controller X4(AR-PE1) is one of several imaging products engineered and manufactured by Electronics For Imaging.

# 1

## Introduction

### How the Print Controller X4(AR-PE1) operates

The Print Controller X4(AR-PE1) enables the customer to use a color copier as a printer and scanner. Users can print to the Print Controller X4(AR-PE1) from networked PCs running Microsoft Windows, from networked Mac OS computers, and from networked UNIX workstations running TCP/IP.

The Print Controller X4(AR-PE1) custom-designed boards and system software are responsible for efficient image processing and printing controls. The main functions of Print Controller X4(AR-PE1) components and software are described below.

The Print Controller X4(AR-PE1) uses specialized circuit boards, the motherboard and the copier interface board, to process image data for printing and scanning images.

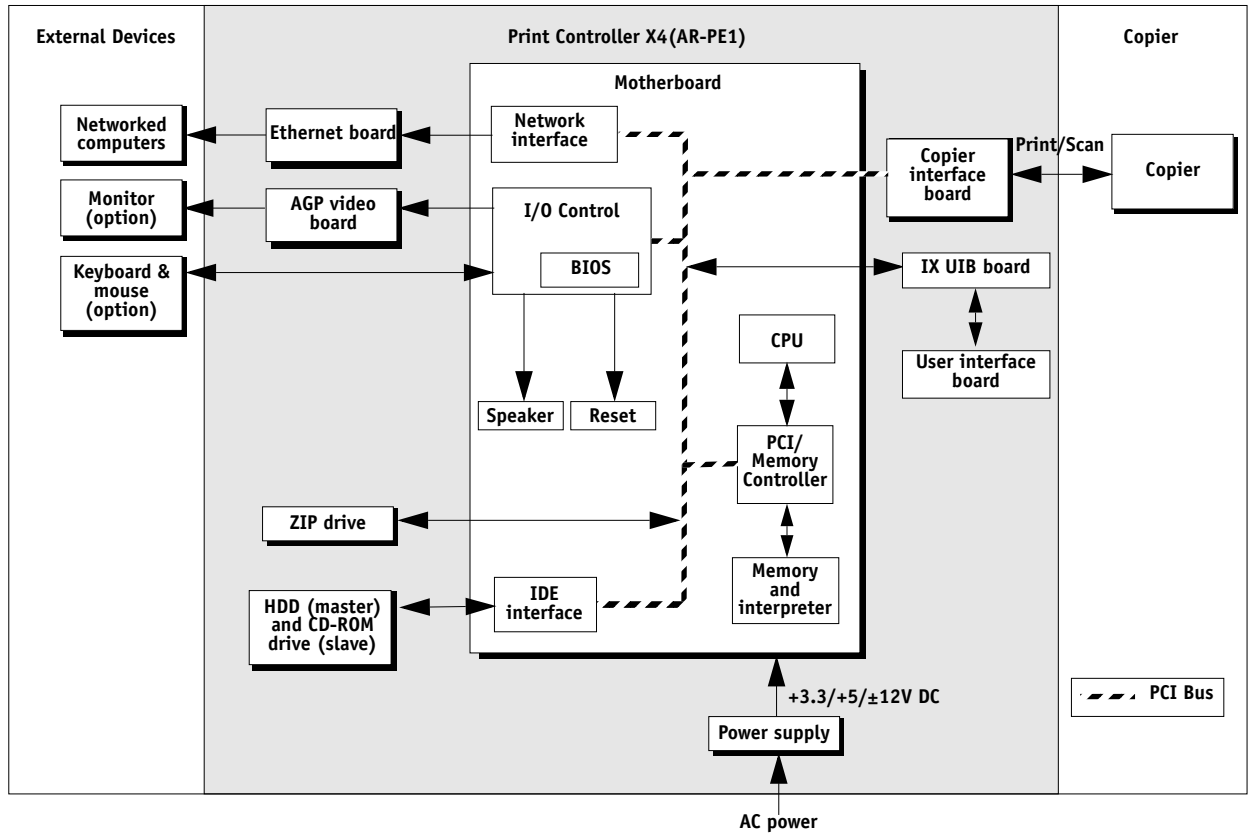
The motherboard includes a 433MHz CPU chip which controls the image data transfer to and from the copier interface board and runs the interpreter. The interpreter rasterizes the page description file and then compresses the image pattern into memory using compression technology.

The interpreter outputs compressed raster data through the image frame buffer memory to the Print Controller X4(AR-PE1) copier interface board. The copier interface board decompresses the image data and sends it to the copier through the copier interface cable shipped with the copier. The raster data supplied to the laser in the copier charges the drum and renders the final image on paper at full copier engine speed.

High-speed DIMMs (dual in-line memory modules) on the motherboard hold the image data during printing. The Print Controller X4(AR-PE1) is configured with 192MB of memory.

When Fiery Scan™ uses the copier as a scanner, the Print Controller X4(AR-PE1) acquires RGB (red, green, and blue) image data from the copier, stores it in memory, and transmits it to the computer that requested the scan.

# 1 Print options



**FIGURE 1-2** Print Controller X4(AR-PE1) functional diagram

## Print options

The Print Controller X4(AR-PE1)'s efficient capabilities allow users to use a variety of applications to create and print pages of text and/or images.

Printing over a network allows Print Controller X4(AR-PE1) users to print documents directly from applications in which they were created. In addition, the Print Controller X4(AR-PE1) offers an efficient way to print files that have been saved in PostScript, EPS (Encapsulated PostScript), or PDF (Portable Document Format). These files can be downloaded directly to the Print Controller X4(AR-PE1) using Fiery Downloader™, one of the remote utilities for use with the Print Controller X4(AR-PE1).

# 1 Introduction

## User software

The full set of Print Controller X4(AR-PE1) user software is provided on the User Software CD.

Adobe PS Printer Driver	Enables users to print to the Print Controller X4(AR-PE1) from Windows 95/98, Windows NT 4.0, and Mac OS computers; also supports special Print Controller X4(AR-PE1) and PostScript 3 features.
PostScript Printer Description files (PPDs)	For use with the PostScript printer driver that allows the Print Controller X4(AR-PE1) to appear in popular applications' Print and Page Setup dialog boxes. The Print Controller X4(AR-PE1) PPDs provide information about the Print Controller X4(AR-PE1) and the user's particular copier model to the application and printer driver being used.
PostScript Screen Fonts (Mac OS only)	PostScript screen and printer screen fonts that correspond to the 136 PostScript printer fonts installed on the Print Controller X4(AR-PE1) (126 Adobe Type 1 and 10 TrueType). See the <i>Printing Guide</i> for a complete list of PostScript fonts installed on the Print Controller X4(AR-PE1).
Fiery Downloader	Enables users to print PostScript files, Encapsulated PostScript (EPS) files, and Portable Document Format (PDF) files directly to the Print Controller X4(AR-PE1) without opening the application in which they were created. Fiery Downloader also enables users to manage the printer fonts installed on the Print Controller X4(AR-PE1).
Fiery Spooler (Mac OS only)	Enables users to view the order and priority of print jobs, customize printer settings for jobs, delete jobs, and move jobs between queues. It can also be used to view job accounting information.
ColorWise Pro Tools	ICC-open color management and calibration tools; enables users to edit and download ICC profiles.
Fiery Scan	Plug-in modules for Photoshop that enable users to scan images from the copier directly into applications.
Fiery Link	Enables users to monitor the status of the connected Print Controller X4(AR-PE1) and the print jobs sent to it.

# 1

## User software

Command WorkStation software	Enables the operator to control the Print Controller X4(AR-PE1) functions from Windows 95/98 and Windows NT 4.0 workstations. To use the Command WorkStation, see the <i>Job Management Guide</i> .
Color management files	ColorSync and ICM color management files that enable users to maintain consistent color from the original artwork to the colors displayed on the monitor to the printed output.
Color reference files	Reference pages that users can print to view the range of colors available on the Print Controller X4(AR-PE1). For the most predictable color results, refer to these pages when defining colors in applications. For more information on color management, see the <i>Color Guide</i> .

### Fiery WebTools

The Print Controller X4(AR-PE1) can support Internet or intranet access with Fiery WebTools. WebTools include Status, WebSpooler, WebLink, Installer, WebSetup, and WebDownloader. For more information about WebTools, see the user documentation.



# 2

## Installation sequence

### Chapter 2: Preparing for Installation

This chapter includes the following information:

- Summary of the installation sequence
- Checking the customer site
- Unpacking the Print Controller X4(AR-PE1)
- Print Controller X4(AR-PE1) front and back panel overview

### Installation sequence

Familiarize yourself with Chapters 2 and 3 of this guide before you attempt an installation. The installation sequence described in this chapter is designed to make your job as easy as possible. Installation problems are easier to avoid and diagnose if you proceed from the component to the system level and verify functionality at each stage. Figure 2-1 on page 2-2 outlines the recommended installation procedure for connecting the Print Controller X4(AR-PE1) to the copier.

Because the Print Controller X4(AR-PE1) is a node on the customer's computer network, make sure that you coordinate your scheduled installation with the network administrator at the customer site. Refer the network administrator to the *Configuration Guide* for network setup information.

# 2

## Preparing for Installation

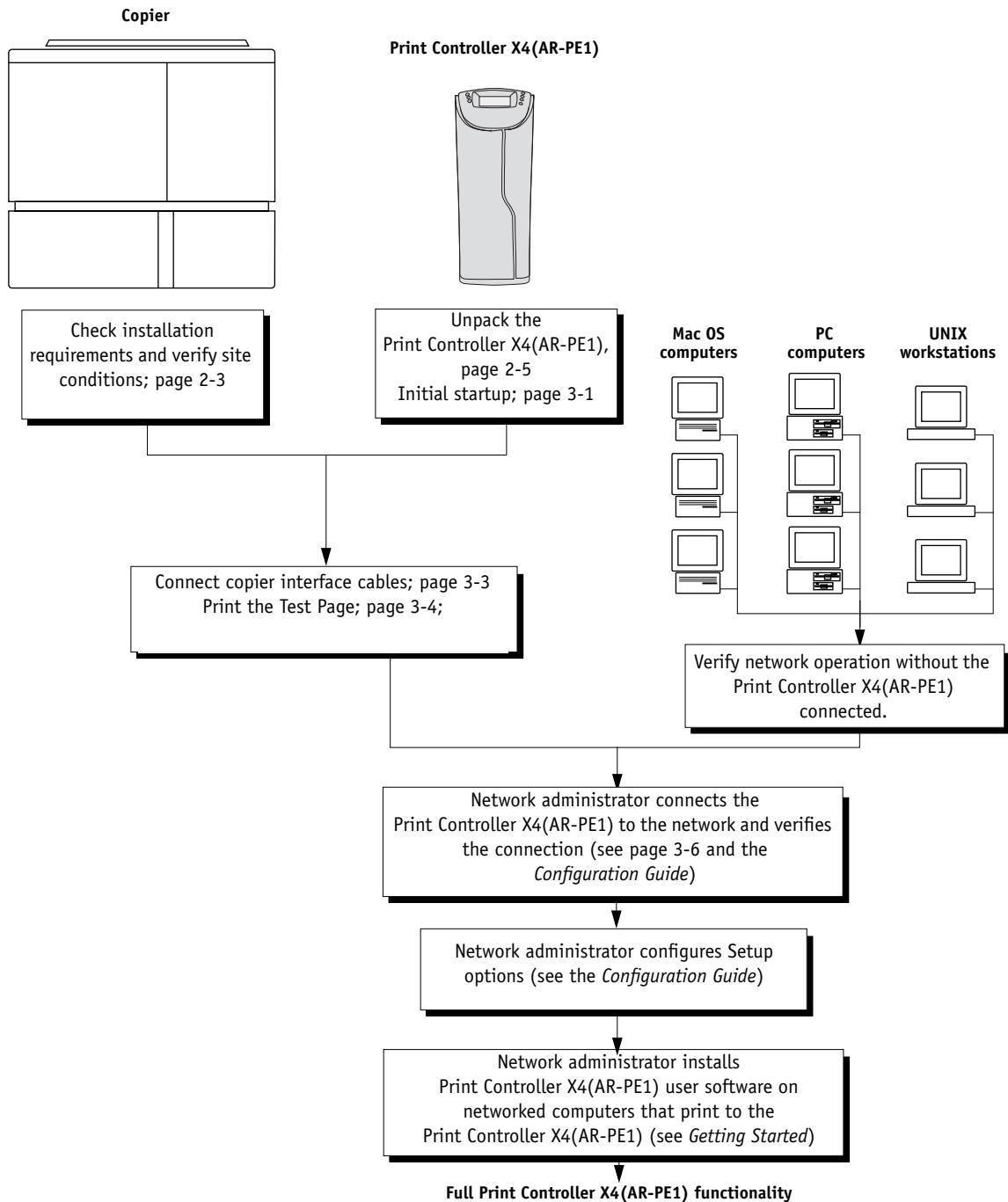


FIGURE 2-1 Recommended installation steps and references



# 2

## Checking the customer site

### Checking the customer site

Before you install the Print Controller X4(AR-PE1), check site conditions and inform the customer of any installation requirements.

#### Copier model

☐ **What copier model is installed?**

☐ **Is there space near the copier for the Print Controller X4(AR-PE1)?**

Make sure that there is space for the Print Controller X4(AR-PE1). You may need to move the copier out from the wall for easier access to the connectors.

☐ **Does the copier require service or adjustments?**

Copy the copier color test page before you install the Print Controller X4(AR-PE1).

If the copied image indicates that the copier needs adjustment, inform the customer. After getting approval, complete the copier service needed.

#### Power

☐ **Is there a dedicated grounded electrical outlet near the copier for the Print Controller X4(AR-PE1)?**

Locate the grounded electrical outlet that will supply power to the Print Controller X4(AR-PE1). You should not run the Print Controller X4(AR-PE1) and the copier on the same circuit. Use a surge suppressor for the Print Controller X4(AR-PE1).

- *Do not* use a 3-prong adapter in a 2-hole ungrounded outlet.
- *Do not* use an extension cord.
- *Do not* plug the Print Controller X4(AR-PE1) into a circuit with heating or refrigeration equipment (including water coolers).
- *Do not* plug the Print Controller X4(AR-PE1) into a switchable wall outlet. This can result in the Print Controller X4(AR-PE1) being turned off accidentally.

# 2

## Preparing for Installation

### Network

- ☐ **What is the network cable and connection type?**
- ☐ **Is the network connection ready and tested for Print Controller X4(AR-PE1) installation?**

To verify that the network is functioning before you connect the Print Controller X4(AR-PE1):

- Ask the network administrator to print a document on a shared printer over the network.
- Ask the network administrator to verify the computer and network requirements as specified in *Getting Started*.

### System contact person

- ☐ **Will the person responsible for the computers and the network be available at the time set for installation? Get a name as a contact.**

### Setting customer expectations

If the site is ready, installation takes about one hour. The customer should be informed of the following:

- Some nodes on the network may be unavailable for up to one hour.
- The copier may be unavailable for up to one hour.
- The network administrator needs to be available during the installation for network connectivity.

Equipment downtime and impact on the network can be minimized if the network administrator installs a network connector for the Print Controller X4(AR-PE1) and confirms network functionality with the connector in place before the date scheduled for the Print Controller X4(AR-PE1) installation.

- The network administrator should have a networked computer available during the installation. The appropriate software should already be installed. Documentation for the networked computer and the network operating software should be available.
- The network administrator should install the user software shipped with the Print Controller X4(AR-PE1) (user documentation is also included) onto networked PC and Mac OS computers that will print to the Print Controller X4(AR-PE1).

**NOTE:** This guide covers Print Controller X4(AR-PE1) hardware installation and service. It provides general information on connecting the Print Controller X4(AR-PE1) to the customer's network. Network setup and configuration information goes beyond the scope of this guide. For network setup and configuration information, the network administrator should use the *Configuration Guide*.

# 2

## Unpacking the Print Controller X4(AR-PE1)

### Unpacking the Print Controller X4(AR-PE1)

The Print Controller X4(AR-PE1) is assembled and shipped from the factory in a box that includes all necessary cables and documentation, as shown in Figure 2-2 on page 2-6.

---

#### TO UNPACK THE PRINT CONTROLLER X4(AR-PE1)

**1. Open the Print Controller X4(AR-PE1) Color Server box and remove the packing material.**

Save the original boxes and packing materials. If you need to transport the Print Controller X4(AR-PE1) at a later date, the original box and packing material will ensure safe shipment.

**2. Remove the contents from the top container. Inspect the contents for visible damage. The top container should include the following items:**

- Bag containing an AC power cable.
- Media package (includes a package of user documentation and software).

**3. Give the media package to the customer or the network administrator.**

Let the customer or network administrator know that in order to take full advantage of the Print Controller X4(AR-PE1), the user software must be installed on computers that will print to the Print Controller X4(AR-PE1).

**4. Set aside the remaining components from the top container.**

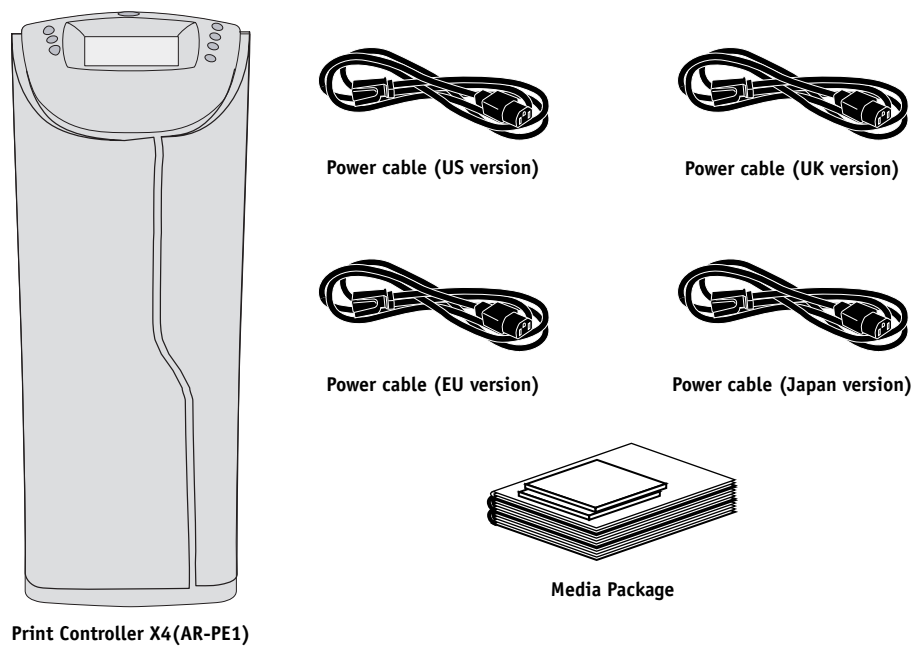
**5. Remove the top container and any packing materials.**

Set aside the packing material and note the orientation of the Print Controller X4(AR-PE1) inside the shipping container in case you need to repack it later.

**6. Carefully lift the Print Controller X4(AR-PE1) out of the box.**

If you notice shipping damage to any Print Controller X4(AR-PE1) component, be sure to save the shipping container in case the carrier needs to see it. Call the carrier immediately to report the damage and file a claim, then call your authorized service/support center. Be ready to furnish the serial number, printed on the back of the Print Controller X4(AR-PE1).

## 2 Preparing for Installation



**FIGURE 2-2** Contents of Print Controller X4(AR-PE1) shipping box

# 2

## Print Controller X4(AR-PE1) panels

### Print Controller X4(AR-PE1) panels

Once you have unpacked the Print Controller X4(AR-PE1), you can familiarize yourself with the front and back of the Print Controller X4(AR-PE1) before you install it.

To open the drive doors on the front panel, press the release on the left door and then open the doors.

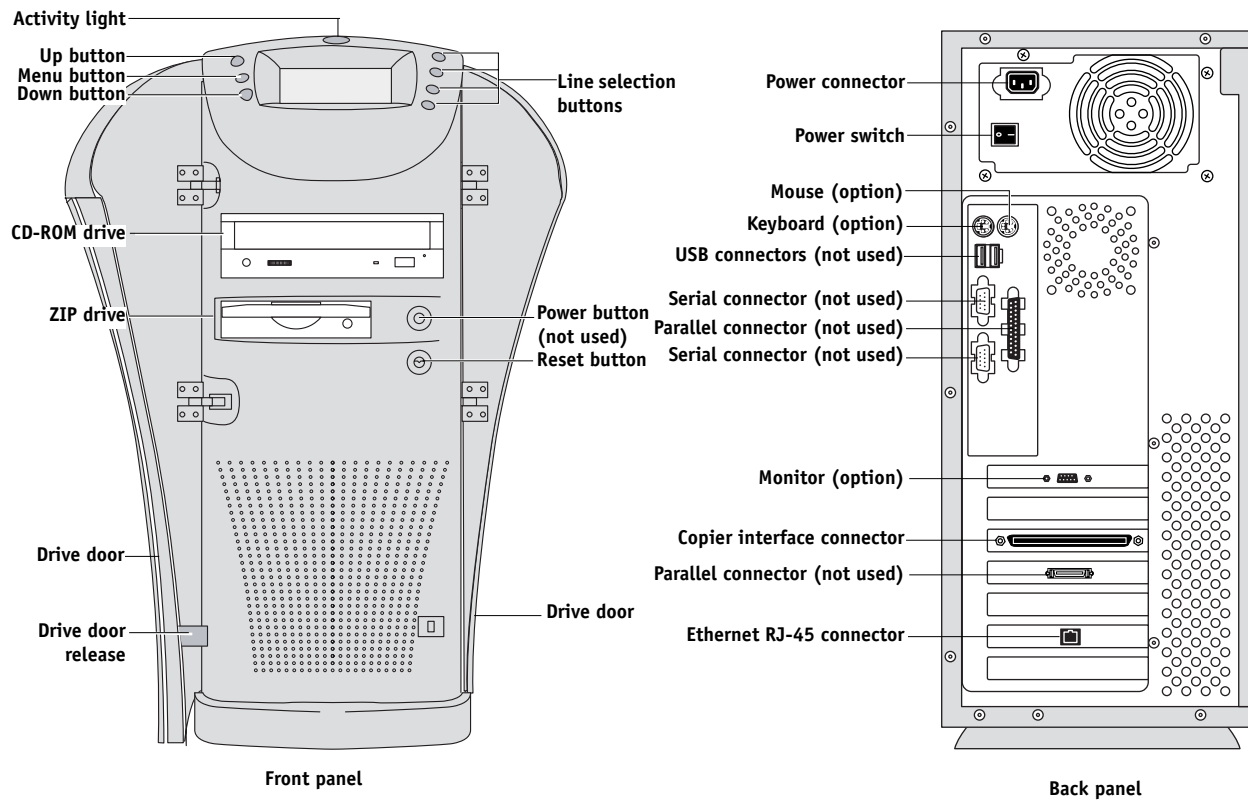


FIGURE 2-3 Front and back panels



# 3

## Preliminary checkout

### Chapter 3: Connecting the Print Controller X4(AR-PE1)

Once you have unpacked or serviced the Print Controller X4(AR-PE1), power it up before you connect it to the copier and the network. Diagnostics are run automatically during startup to check the Print Controller X4(AR-PE1) for internal problems.

#### Preliminary checkout

The following procedure describes how to connect power to the Print Controller X4(AR-PE1).

---

#### TO CONNECT POWER AND START THE PRINT CONTROLLER X4(AR-PE1)

1. Make sure the Print Controller X4(AR-PE1) power switch is in the off position (press 0), and then connect the other end of the Print Controller X4(AR-PE1) power cable to a wall outlet.

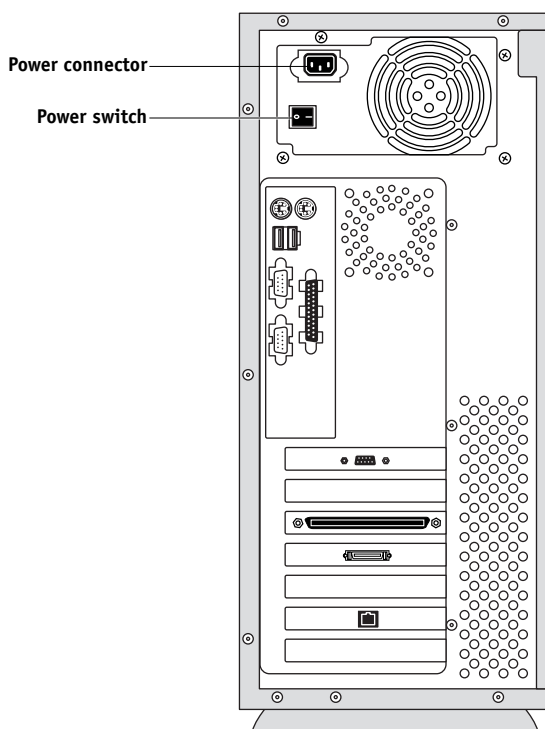


FIGURE 3-1 Print Controller X4(AR-PE1) power

2. Power on the Print Controller X4(AR-PE1) using the switch at the back of the Print Controller X4(AR-PE1). The power supply automatically senses the correct voltage.
3. To confirm that the Print Controller X4(AR-PE1) is operating properly allow Print Controller X4(AR-PE1) startup to proceed without interruption while you watch the Control Panel. Do not press any buttons on the Control Panel.

# 3

## Connecting the Print Controller X4(AR-PE1)

### 4. If the Select Language screen is displayed, select the language for the Control Panel.

The language screen is displayed the first time you start the Print Controller X4(AR-PE1) after unpacking it. Once you select the language the system reboots and begins initializing the system in that language.

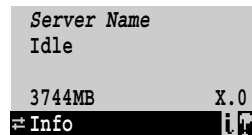
To select a language different from the one initially highlighted on the Control Panel, use the up and down buttons to scroll through the list and select OK when the desired language is highlighted.

### 5. Allow the system to proceed to Idle to confirm that the Print Controller X4(AR-PE1) is operating correctly.

**NOTE:** The message Check power and cable may display in the Control Panel during the startup process. Once the Print Controller X4(AR-PE1) is connected to the copier the message should no longer be displayed.

Before the system reaches the Idle screen it creates a backup of the system software configuration for the language you selected. If at some point you need to restore the default configuration of the system software, see “Retrieving backup system software” on page 4-46.

Once the Print Controller X4(AR-PE1) reaches the idle state, you are ready to connect it to the copier and the network. Setup options should be configured after making these connections. It is the network administrator’s responsibility to configure Setup according to the network and user environment. Refer the network administrator to the *Configuration Guide* for Setup information.





# 3

## Connecting to the copier

### Connecting to the copier

After completing the preliminary checkout, connect the Print Controller X4(AR-PE1) to the copier. The Print Controller X4(AR-PE1) communicates with the copier through a cable from the copier interface board to the interface port on the copier.

#### TO CONNECT THE PRINT CONTROLLER X4(AR-PE1) TO THE COPIER

1. **Power off the Print Controller X4(AR-PE1) and the copier.**

You may need to get permission from the network administrator or supervisor to power off the copier.

2. **Locate the Print Controller X4(AR-PE1) copier interface cable shipped with the copier, and connect the cable to the interface port on the copier.**
3. **Connect the other end of the cable to the Print Controller X4(AR-PE1) copier interface connector in slot 3 on the back panel (see Figure 3-2).**

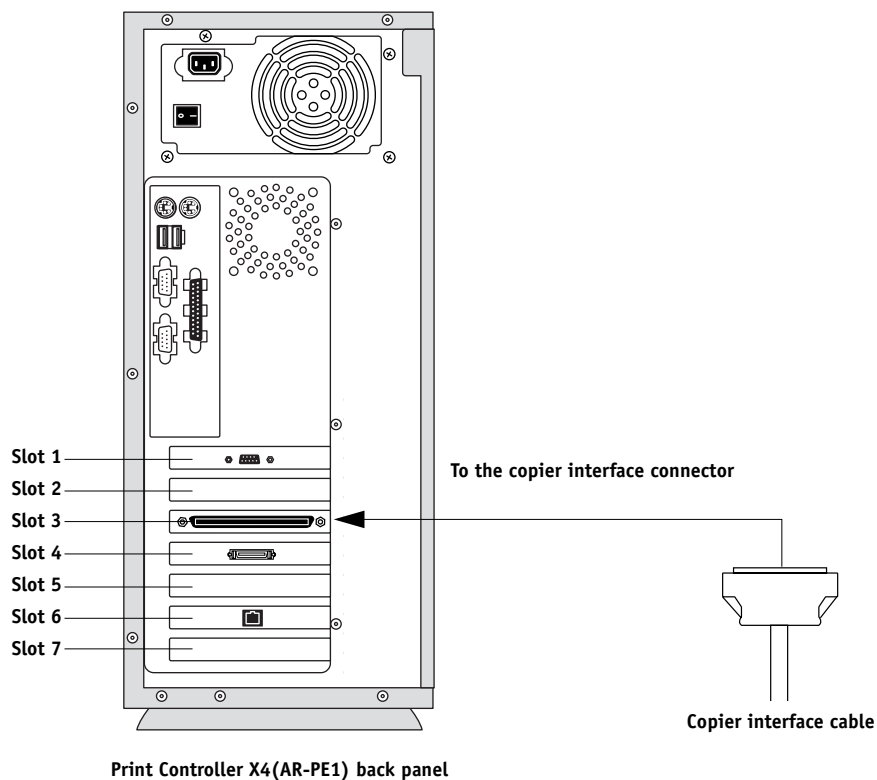


FIGURE 3-2 Copier interface cable connections

# 3

## Connecting the Print Controller X4(AR-PE1)

### Verifying the connection

After you connect the Print Controller X4(AR-PE1) to the copier, print the Test Page to verify that the connection between the Print Controller X4(AR-PE1) and the copier is good.

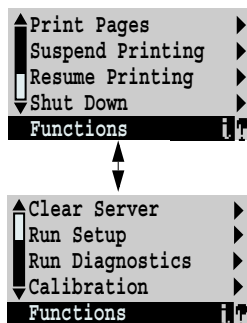
### Printing the Print Controller X4(AR-PE1) Test Page

Before connecting the Print Controller X4(AR-PE1) to the network, print the Test Page to verify that the Print Controller X4(AR-PE1) is connected properly to the copier. The Test Page is a color file that resides on the Print Controller X4(AR-PE1) hard disk drive.

---

#### TO PRINT A TEST PAGE FROM THE CONTROL PANEL

1. Power on the copier and allow it to warm up.
2. Power on the Print Controller X4(AR-PE1) from the power switch on the back panel.  
Messages appear on the Control Panel as the Print Controller X4(AR-PE1) runs through its startup diagnostics.
3. Before proceeding, make sure that the copier is not in use. The Print Controller X4(AR-PE1) Info screen should read Idle.
4. At the Idle screen, press the menu button once (see "Using the Control Panel" on page 3-8). The Functions menu is shown below:



Use the up and down buttons to scroll through these options. Use the line selection buttons to the right to select Print Pages.

# 3

## Installing additional options

### 5. Press the line selection button to the right of Print Pages and then select Test Page.

The Print Controller X4(AR-PE1) sends the Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.

### 6. Examine the quality of the Test Page from the copier.

The Test Page confirms that the Print Controller X4(AR-PE1) print engine is functional and that the connection between the Print Controller X4(AR-PE1) and the copier is good.

## Installing additional options

If the customer has purchased additional Print Controller X4(AR-PE1) options, install those before connecting the Print Controller X4(AR-PE1) to the network. For installation instructions, see the documentation included in each option kit.

**NOTE:** After installing options, print the Test Page to verify that the system is operating properly. Checking the installation at each stage makes it easier to pinpoint the cause of problems should they occur.

# 3

## Connecting the Print Controller X4(AR-PE1)

### Connecting to the network

Print Controller X4(AR-PE1) network support is provided through the Ethernet board. The Ethernet board 10/100BaseT connector is located at slot 6 on the back panel. Supported Ethernet board cabling includes 10/100BaseT unshielded twisted pair. For additional network information, see the *Configuration Guide*.

Token Ring compatibility is available with the optional Token Ring kit (see the documentation included with that kit for more information).

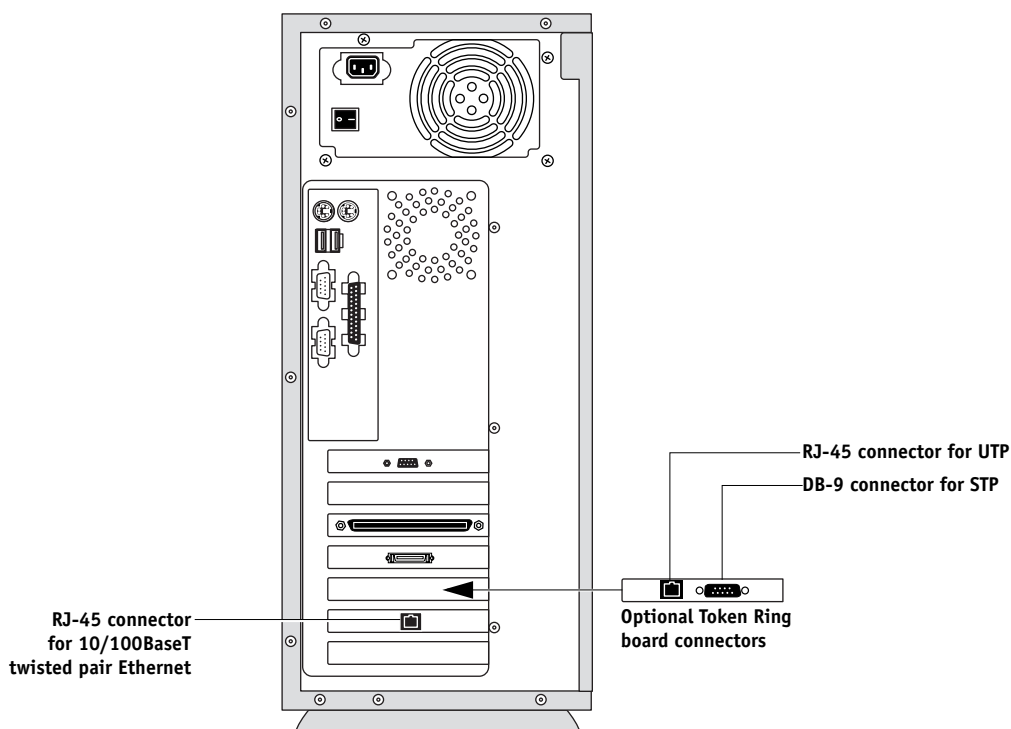


FIGURE 3-3 Network connectors on the back panel

#### TO CONNECT A TWISTED PAIR CABLE TO THE PRINT CONTROLLER X4(AR-PE1)

1. **Power off the Print Controller X4(AR-PE1) before connecting it to any network device.**

If the system has just finished processing, wait 5 seconds after the system reaches the idle state before using the power switch to power off the unit.

2. **Connect the network cable to the RJ-45 connector on the back of the Print Controller X4(AR-PE1).**

A Category 5 unshielded twisted pair cable network cable must be used for 100BaseT.

# 3

## Connecting to the network

### 3. Configure Setup options.

It is the network administrator's responsibility to configure Setup according to the network and user environment. Refer the network administrator to the *Configuration Guide* for Setup information.

### 4. After configuring Setup options, verify the network connection.

Once the network connection has been made and the Print Controller X4(AR-PE1) has the correct Setup configuration, the Print Controller X4(AR-PE1) should be available on the network.

The network administrator should perform any additional network setup, verify the network connection, verify that the Print Controller X4(AR-PE1) appears in the list of printers, and print a few test documents from a networked computer that will use the Print Controller X4(AR-PE1). (See the *Configuration Guide* for more information.)

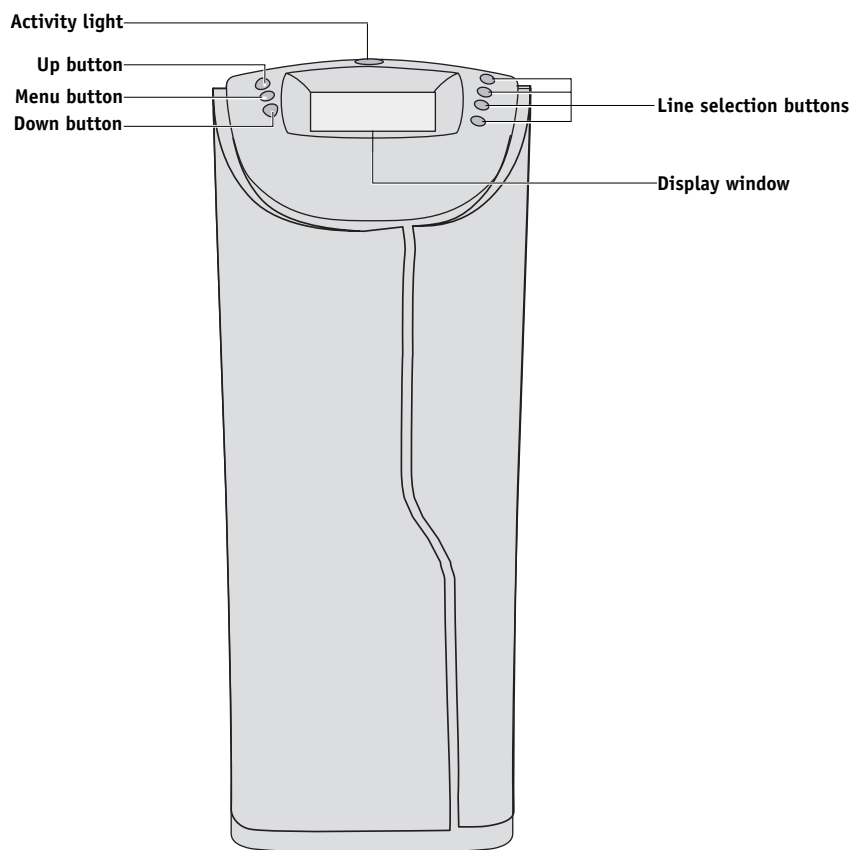
# 3

## Connecting the Print Controller X4(AR-PE1)

### Using the Control Panel

This section describes the Control Panel on the front of the Print Controller X4(AR-PE1). Once you install the Print Controller X4(AR-PE1) and verify that it powers up correctly, you can use the Control Panel to access and monitor different functions of the Print Controller X4(AR-PE1).

The current status of the Print Controller X4(AR-PE1) and Setup information are displayed in the Print Controller X4(AR-PE1) display window. Print Controller X4(AR-PE1) activity can be monitored in the display window, and functions of the Print Controller X4(AR-PE1) (such as printing a Test Page and installing or updating system software) can be controlled using the buttons on the Control Panel.



**FIGURE 3-4** The Print Controller X4(AR-PE1) Control Panel

# 3

## Using the Control Panel

### Activity light

The activity light indicates current Print Controller X4(AR-PE1) activity. If the light is:

Flashing or solid red	There is an error causing printing to be disabled. The activity light also flashes red during startup.
Solid green	The Print Controller X4(AR-PE1) is idle or starting up.
Flashing green	The Print Controller X4(AR-PE1) is processing or printing a job.
No light	The Print Controller X4(AR-PE1) is powered off.

### Buttons

Line selection buttons	There are four line selection buttons on the right side of the Control Panel. Use these buttons to select the command displayed on the corresponding line of the display window. A special character (▶) appears in the display window next to a button when it is available.
Up and down buttons	Use these buttons to scroll to different screens in multi-screen lists, to select Setup options from a list, and to select alphanumeric characters.
Menu button	Press this button to view other display screens. There are several different display screens, showing different types of information about the Print Controller X4(AR-PE1).

# 3

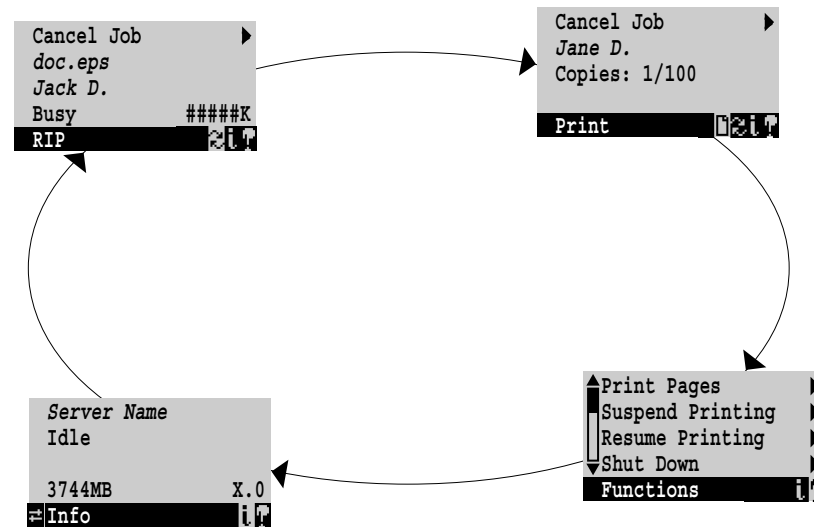
## Connecting the Print Controller X4(AR-PE1)

### Control Panel screens and icons

When the Print Controller X4(AR-PE1) is in Print mode, pressing the menu button cycles among four screens: three status screens (Info, RIP, and Print) and the Functions menu (see Figure 3-5). When the Print Controller X4(AR-PE1) is idle, pressing the menu button cycles between the Info screen and the Functions menu.

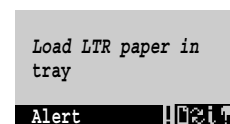
The bottom line of the screen displays the name of the current screen with the icon for that screen highlighted. Icons for other active screens are also displayed but are not highlighted.

The Print Controller X4(AR-PE1) screens display the following information:



**FIGURE 3-5** Control Panel screens during printing

If an error occurs, the Alert screen is displayed with a message describing the error.








# 3

## Using the Control Panel

The display window screens and icons are:

	Alert Status	If there is a problem during printing or processing, the Alert Status screen is activated, displaying an error message. For information on error messages, see the <i>Printing Guide</i> .
	Print Status	<p>When the Print Controller X4(AR-PE1) is printing, the Print Status screen is activated. This screen displays the following:</p> <p>Cancel Job —Press the top line selection button to cancel the job currently printing.</p> <p>User name —The name of the user who sent the job that is currently being processed.</p> <p>Copies/Total —The number of copies of the current page that have been printed so far, and the total number of copies of this page that were requested.</p>
	RIP Status	<p>When the Print Controller X4(AR-PE1) is processing a job, the RIP Status screen is activated. This screen displays the following:</p> <p>Cancel Job —Press the top line selection button to cancel the job currently processing. The Print Controller X4(AR-PE1) cancels the job before printing begins.</p> <p>Document name —The name of the document currently processing.</p> <p>User name —The name of the user who sent the job that is currently being processed.</p> <p>Kilobytes —The amount in kilobytes of the job that has been processed so far.</p>

# 3

## Connecting the Print Controller X4(AR-PE1)



### Info Status

The Info Status screen displays information about the server's current activity, and software version. This screen is always active, and it appears in the display window when no other screen is selected. It displays the following information:

**Server Name** —The Print Controller X4(AR-PE1) name as it is configured in Setup.

**Status** —The current status of the Print Controller X4(AR-PE1). The status can be: Idle, Initializing, Busy, Processing, or Printing.

**Number of MB** —The space in megabytes available on the Print Controller X4(AR-PE1) hard disk.

**Version**—The system software version running on the Print Controller X4(AR-PE1).



### Functions

The Functions screen also is always active, but it appears in the display window only when the user has pressed the Menu button to select it. Use the up and down buttons to scroll through the list of menu command options. Press the line selection button to the right of a command to select it.



### Network

The Network icon appears in the bottom left corner of the display window when the Print Controller X4(AR-PE1) is communicating over the network. The Network icon can appear while any screen is displayed.

# 3

## Using the Control Panel

### Functions menu

The Functions menu allows you to perform a variety of administrative functions that do not affect print jobs of other users. Use the up and down buttons to scroll through the list of options. Press the line selection button next to the option you want to select.

The following options are available from the Functions menu:

**Print Pages**— Enables you to print special pages from the Print Controller X4(AR-PE1). You can print the following pages from the submenu that appears:

- **Test Page**—Enables you to confirm that the Print Controller X4(AR-PE1)-to-copier interface is functioning properly. The Test Page provides sample images that can be used to troubleshoot the Print Controller X4(AR-PE1). The following information is also listed: Server name, printer model, output profile, calibration information, RGB source, rendering style, date and time printed, CMYK simulation , simulation method, and compression information.
- **Configuration**— Prints the current server and device configuration. This includes information about all current Setup settings, calibration profile, and the Ethernet address of the Print Controller X4(AR-PE1). The Configuration Page also provides version information for the BIOS chip and information on any options installed on the Print Controller X4(AR-PE1).
- **Job Log**— Prints the log of the last 55 jobs by default. For more information about the job log, see the *Printing Guide*.
- **Control Panel Map**— Prints the Setup screen help pages. These pages are useful when navigating through the different Setup screens.
- **Color Charts**— Prints the color reference charts. These pages include swatches of the RGB, CMY, and PANTONE colors available from the Print Controller X4(AR-PE1).
- **Font List**— Prints a list of all fonts resident on the Print Controller X4(AR-PE1) hard disk.

**Suspend Printing**— Disconnects the Print Controller X4(AR-PE1) from the copier. This option interrupts the current print job so you can use the copier to make copies; after you make the copies you can select **Resume Printing** and the copier continues processing and printing jobs.

**Resume Printing**— Connects the copier to the Print Controller X4(AR-PE1) so you can resume printing after interrupting the print job to make copies (used with **Suspend Printing**).

# 3

## Connecting the Print Controller X4(AR-PE1)

Shut Down— When you select this option, you can choose from the following:.

- Restart Server— Resets the Print Controller X4(AR-PE1) server software but does not reboot the entire system. Network access to the Print Controller X4(AR-PE1) is temporarily interrupted and all currently processing jobs are aborted and might be lost.
- Shut Down System— Shuts down all Print Controller X4(AR-PE1) activity properly so that you can power off the system using the power switch on the back panel. You should always select this option before powering off the system or using the reset button.
- Reboot System— Shuts down all Print Controller X4(AR-PE1) activity properly and then restarts.

**NOTE:** A reset button on the front panel is also available and should only be used after selecting Shut Down System first.

Clear Server —Clears all jobs from the server queues. It also clears the Job Log, all jobs saved on the server hard disk drive, and the index of all archived jobs.

Run Setup —allows you to access the Setup options in order to configure the network and printing environment. Typically it is the network administrator's responsibility to configure Setup according to the network and user environment. Setup is required the first time the copier is powered on and after Print Controller X4(AR-PE1) system software is installed.

**NOTE:** You must save changes to Server, Network, and Printer Setup after installing system software. See the *Configuration Guide* for a list of options and detailed descriptions of each Setup option.

Run Diagnostics— When you select this option, you can run the following diagnostic test:

- Test I/F board— Runs diagnostics on the Print Controller X4(AR-PE1) copier interface board.

Select the diagnostic test and press the line selection button next to OK.

Calibration —Allows users to calibrate the Print Controller X4(AR-PE1) using AutoCal. For more information, see the *Job Management Guide*.

# 3

## Shutting down and restarting

### Shutting down and restarting

The Print Controller X4(AR-PE1) will generally be left on all the time at the customer site. Remember that when the Print Controller X4(AR-PE1) is powered off, network access to the copier is interrupted.

You should power off the Print Controller X4(AR-PE1) when you need to service it or the copier, and before you remove or attach any cables to the Print Controller X4(AR-PE1). Also power off when changing the copier's toner to prevent drawing toner into the Print Controller X4(AR-PE1).

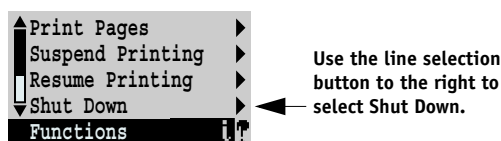
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#### TO SHUT DOWN THE PRINT CONTROLLER X4(AR-PE1)

1. **Make sure that the Print Controller X4(AR-PE1) Info screen reads Idle.**

When Printing or Ripping appears on the Control Panel the Print Controller X4(AR-PE1) is currently processing. Idle appears in the Info screen when the Print Controller X4(AR-PE1) is finished processing the job.

2. **At the Idle screen, press the menu button once to display the Functions menu.**



3. **Select Shut Down from the Functions menu. At the next screen, select Shut Down System.**  
The message It is now safe to power off the system.... is displayed.
4. **Power off the Print Controller X4(AR-PE1) using the power switch on the back panel.**

---

#### TO RESTART THE PRINT CONTROLLER X4(AR-PE1)

1. **If the Print Controller X4(AR-PE1) is already on, ensure that it is not receiving, processing, or printing a document.**

When Printing or Ripping appears on the Print Controller X4(AR-PE1) Control Panel, the Print Controller X4(AR-PE1) is currently processing a print job. Wait until the job is complete and Idle appears in the Info screen.

2. **Press the menu button once, then select Shut Down from the Functions menu and select Reboot System.**



# 4

## Overview

### Chapter 4: Service Procedures

Generally, the Print Controller X4(AR-PE1) requires no regular service or maintenance. Use the procedures in this chapter to inspect, remove, reseal, and replace major hardware components as well as to install system software.

#### Overview

This chapter includes information on servicing the following components:

- Boards
- Cables
- DIMMs (dual in-line memory modules)
- Motherboard CPU, BIOS chip, and battery
- Fans (front panel fan, CPU fan)
- Power supply
- HDD (hard disk drive)
- ZIP drive
- CD-ROM drive
- Front panel jewel

See Figure 4-1 on page 4-2 for an overview of components. Replacement parts are available from your authorized service representative.



When performing the service procedures described in this chapter, follow the precautions listed in “Precautions” on page vii.

**NOTE:** The tools required for service are listed in “Tools you will need” on page ix.

#### System software service

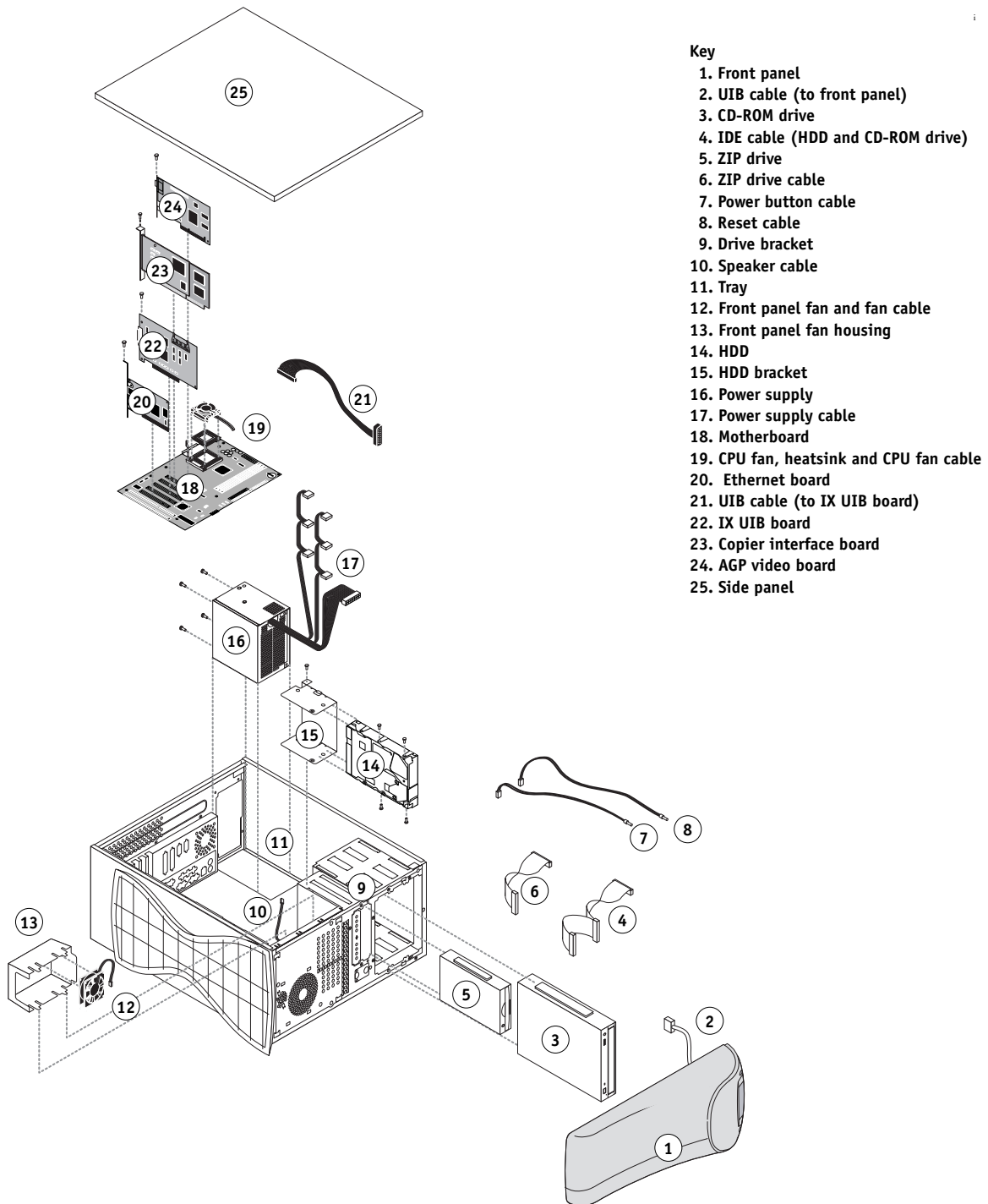
Print Controller X4(AR-PE1) system software is installed on the HDD at the factory. A backup of the system software resides on a separate partition on the HDD. You can retrieve a backup of the system software using the Restore Backup function in the Service menu. In addition system software is also provided on a CD. Use the System Software CD when you:

- Replace the HDD
- Upgrade to a more recent version of the system software

For information, see “Print Controller X4(AR-PE1) system software service” on page 4-45.

# 4

## Service Procedures



**FIGURE 4-1** Exploded view of Print Controller X4(AR-PE1) components



# 4

## Accessing Print Controller X4(AR-PE1) internal components

### Accessing Print Controller X4(AR-PE1) internal components

In order to access internal components, you must first shut down the Print Controller X4(AR-PE1) and remove the side panel.

Always use the procedure below when opening the Print Controller X4(AR-PE1). If the Print Controller X4(AR-PE1) is powered on, shut down the system.

### Shutting down and restarting the Print Controller X4(AR-PE1)

The Print Controller X4(AR-PE1) will generally be left on all the time at the customer site. Remember that when the Print Controller X4(AR-PE1) is powered off, network access to the copier is interrupted.

You should power off the Print Controller X4(AR-PE1) when you need to service it or the copier, and before you remove or attach any cables to it. Power off the Print Controller X4(AR-PE1) when changing the copier's toner in order to prevent the fan from drawing toner into the Print Controller X4(AR-PE1).

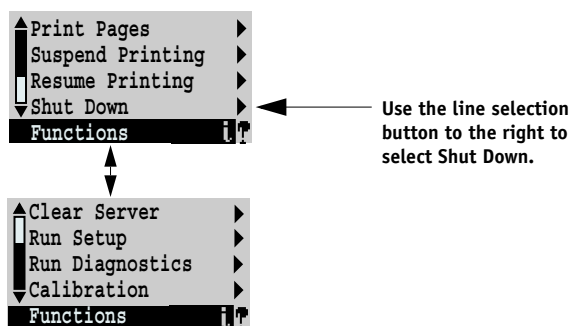
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#### TO SHUT DOWN THE PRINT CONTROLLER X4(AR-PE1)

1. **Make sure that the Print Controller X4(AR-PE1) Info screen reads Idle.**

When Printing or Ripping appears on the Control Panel the Print Controller X4(AR-PE1) is currently processing. Idle appears in the Info screen when the Print Controller X4(AR-PE1) is finished processing the job.

2. **At the Idle screen, press the menu button once to display the Functions menu.**



3. **Select Shut Down from the Functions menu.**

4. **At the next screen, select Shut Down System.**

The message It is now safe to power off the system.... is displayed.

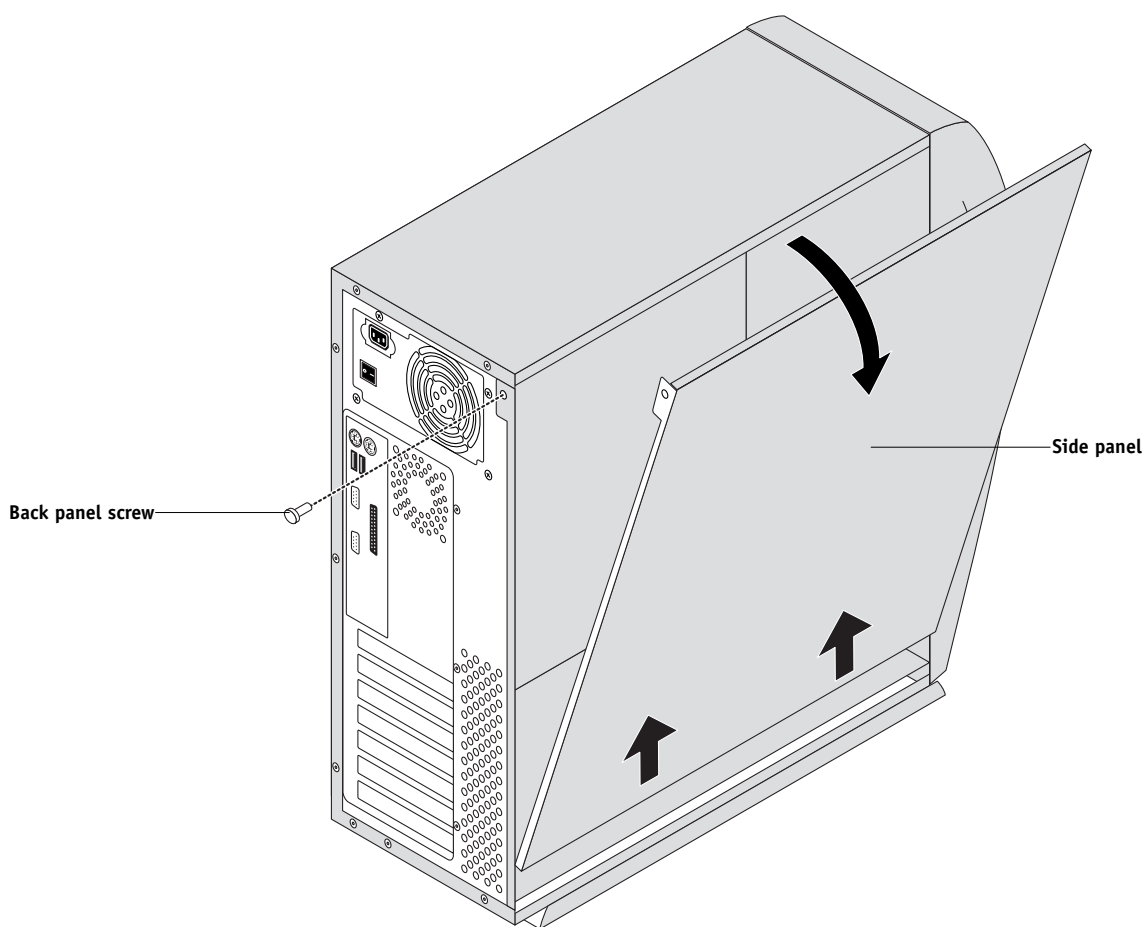
5. **Power off the Print Controller X4(AR-PE1) using the power switch on the back panel (press 0).**

# 4

## Service Procedures

### TO OPEN THE PRINT CONTROLLER X4(AR-PE1)

1. Make sure you have powered off the Print Controller X4(AR-PE1) and removed all the cables from the back.
2. Remove the screw from the back panel and set it aside (see Figure 4-2).
3. Grasp the side panel at the top on both sides and gently pull it away from the tray.
4. Lift off the side panel.



**FIGURE 4-2** Removing the Print Controller X4(AR-PE1) side panel

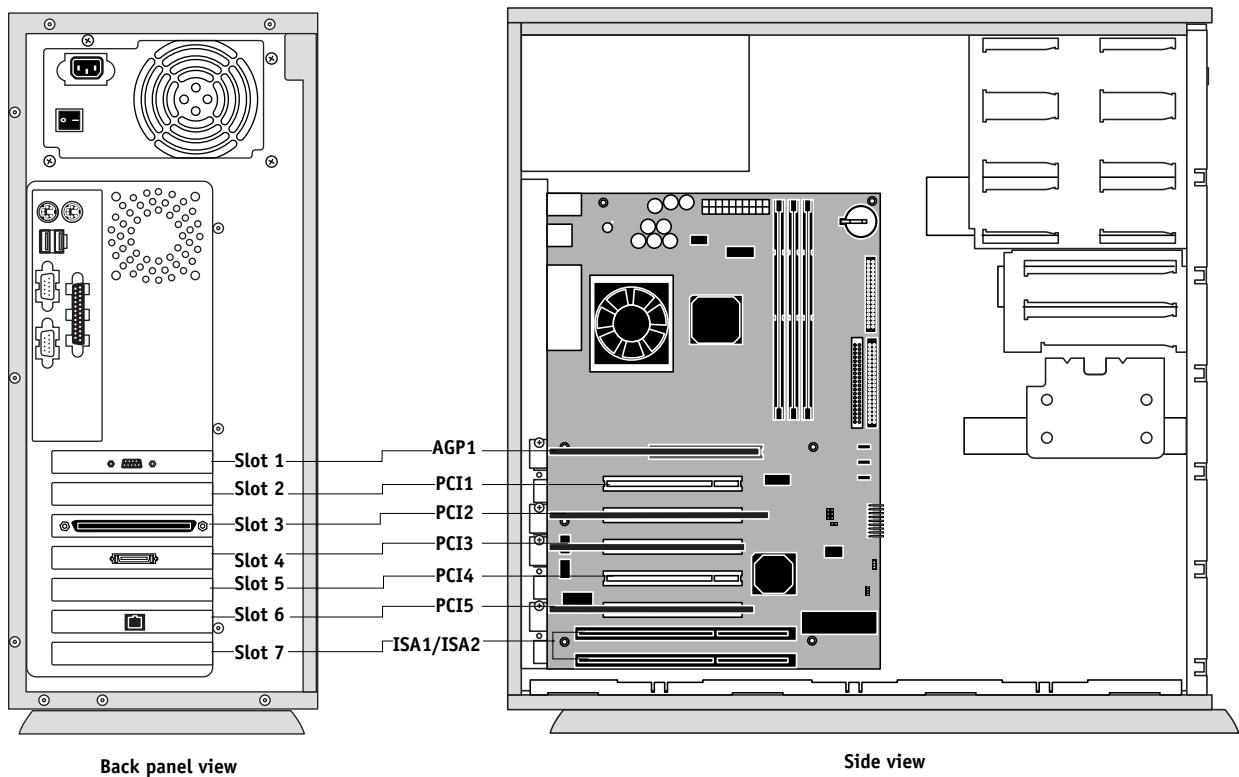
5. The Print Controller X4(AR-PE1) internal components are now accessible. Attach an ESD wrist strap before handling internal parts.

The Print Controller X4(AR-PE1) is shipped from the factory with a standard board configuration, as shown in Figure 4-3. If optional components have been installed, see the documentation that came with the specific kit.

# 4

## Accessing Print Controller X4(AR-PE1) internal components

**NOTE:** To service components inside the tray, position the Print Controller X4(AR-PE1) so that it is resting on its side and the components inside the tray are facing up.



### Motherboard connectors:

- AGP1—AGP video board
- PCI1—Empty
- PCI2—Copier interface board
- PCI3—IX UIB board
- PCI4—Empty (optional Token Ring board)
- PCI5—Ethernet board
- ISA1—Empty
- ISA2—Empty

**FIGURE 4-3** Print Controller X4(AR-PE1) side view and back panel view

# 4

## Service Procedures

### Removing the front panel

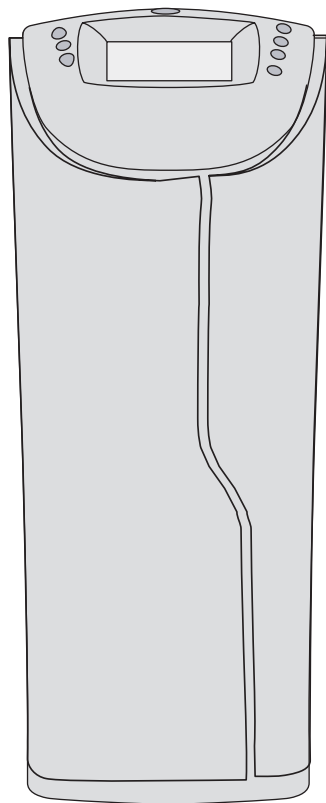
You will need to remove the front panel when replacing the ZIP drive or CD-ROM drive. The following procedure describes how to remove the front panel.

---

#### TO REMOVE THE FRONT PANEL

1. **Make sure you have powered off the Print Controller X4(AR-PE1) and removed all the cables from the back.**
2. **Remove the side panel as described in “To open the Print Controller X4(AR-PE1)” on page 4-4.**
3. **Grasp the front panel and gently detach it from the tray.**

Do not pull the front panel away from the tray as the UIB cable is still connected to the front panel.



**FIGURE 4-4** Front panel

# 4

## Accessing Print Controller X4(AR-PE1) internal components

4. Remove the two screws that secure the UIB cable to its connector on the tray and then remove the UIB cable.

The other end of the UIB cable is connected to the user interface board inside the front panel and should not be removed.

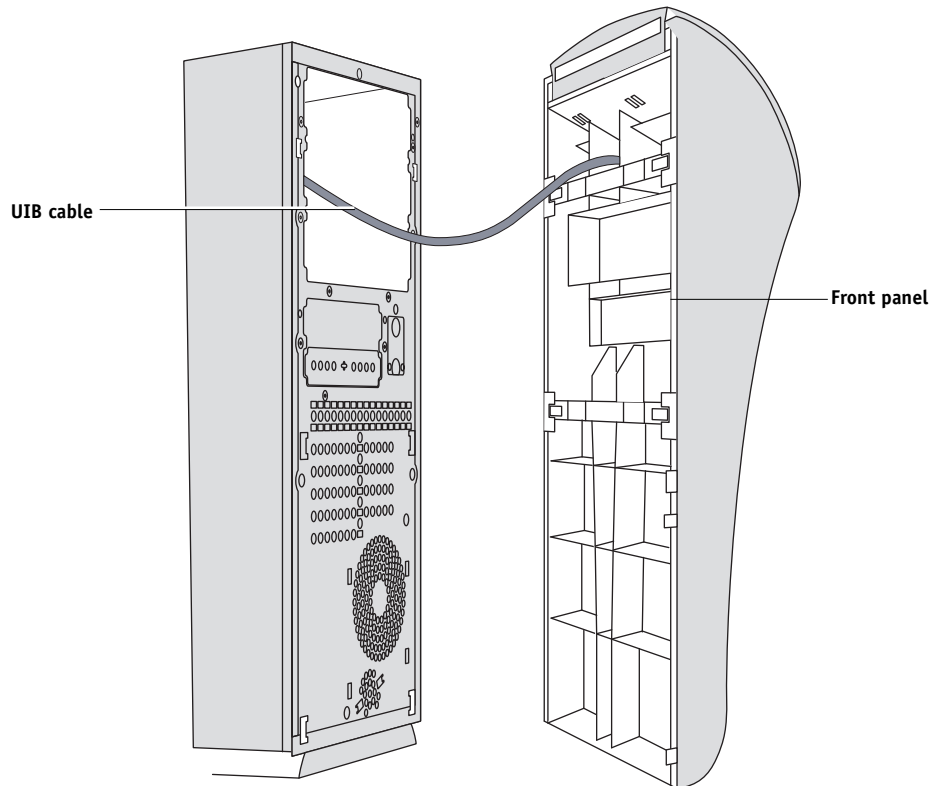


FIGURE 4-5 Removing the front panel

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### TO REPLACE THE FRONT PANEL

1. Connect the UIB cable to its connector on the tray and then replace the screws. The other end of the cable should be attached to the front panel.
2. Replace the front panel as described in "To reassemble the Print Controller X4(AR-PE1)" on page 4-11
3. Align the front panel with the front of the tray and then snap the front panel into place.

### Checking Print Controller X4(AR-PE1) internal connections

The most common causes of hardware problems are faulty and loose connections. Before you conclude that any board or component has failed, remove, inspect, and reseal all appropriate connections, and then verify that the problem still occurs.

---

#### TO CHECK BOARD AND CABLE CONNECTIONS



1. **Before you touch any parts inside the Print Controller X4(AR-PE1), attach a grounding wrist strap. Touching the metal part of the power supply case inside the Print Controller X4(AR-PE1) also discharges static electricity.**

2. **Position the Print Controller X4(AR-PE1) so it is resting on its side and the internal components of the Print Controller X4(AR-PE1) are facing up.**

3. **Inspect the Print Controller X4(AR-PE1) boards for secure insertion into the motherboard. Press down firmly on each board to make sure it is securely installed.**

Looking into the tray from the top, the standard board configuration includes the following (from top to bottom):

Connector AGP1—AGP video board

Connector PCI1—Empty

Connector PCI2—Copier interface board

Connector PCI3—IX UIB board

Connector PCI4—Empty (optional Token Ring board)

Connector PCI5—Ethernet board

Connector ISA1—Empty

Connector ISA2—Empty

4. **Inspect ribbon cables to see if they are intact.**

Faulty ribbon cables are easily overlooked. Check the contact point between the cable and the connector to ensure that they have not separated. If a ribbon cable is suspect, substitute it with a tested cable.

5. **Make sure that all Print Controller X4(AR-PE1) ribbon cables and power cables are seated on connectors. See Figure 4-6 on page 4-9.**

Cable connectors are keyed to fit only when properly oriented.

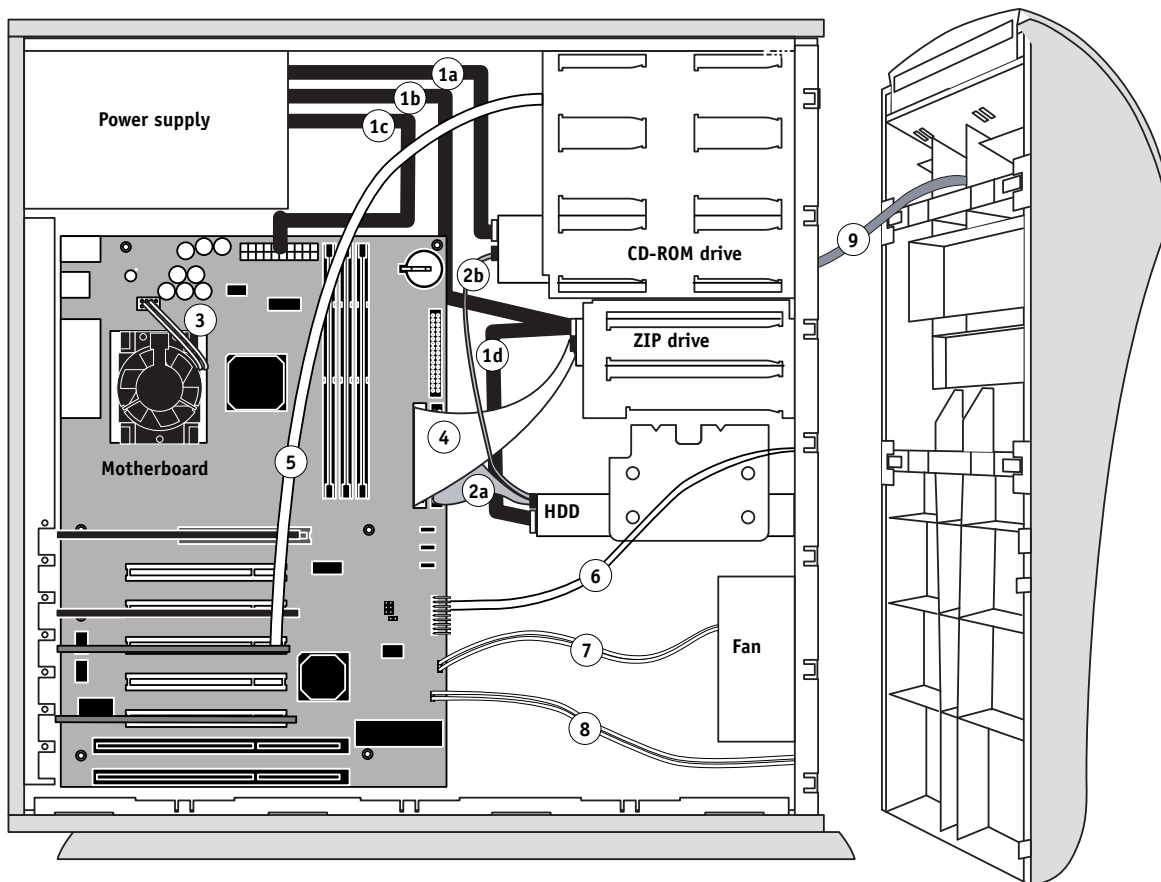
6. **Check the front panel fan cable connection to the motherboard.**

7. **Check the reset button cable, power button cable, and speaker cable connections to the motherboard.**

# 4

## Checking Print Controller X4(AR-PE1) internal connections

8. After tightening connections, if one or more Print Controller X4(AR-PE1) components are still not getting power, see “Checking voltages” on page 4-35.



Cable key	From	To
1. Power supply cable	Power supply	a. CD-ROM drive b. ZIP drive c. Motherboard d. HDD
2. IDE cable	Motherboard connector PIDE	a. HDD (IDE master) b. CD-ROM drive (IDE slave)
3. CPU fan cable	CPU fan	Motherboard connector CPU FAN
4. ZIP drive cable	Motherboard connector SIDE	ZIP drive
5. UIB cable	UIB in the front panel	Connector J4 on the IX UIB board
6. Reset button cable	Motherboard pins RST	Reset button pad on the front of the tray
7. Front panel fan cable	Front panel fan	Fan connector on the motherboard (CFAN)
8. Power button cable	Motherboard pins PWR	Power button pad on the front of the tray
9. UIB cable	UIB cable	Front panel

FIGURE 4-6 Cable connections in the Print Controller X4(AR-PE1)

# 4

## Service Procedures

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### TO CHECK MOTHERBOARD DIMM CONNECTIONS

1. **Check that all DIMMs are locked. If any DIMMs have come loose, release and reseat them.**

DIMMs (dual in-line memory modules) installed on the Print Controller X4(AR-PE1) motherboard are held in place by levers at each end.

2. **To release a DIMM, push outward on the levers on each side of the DIMM.**

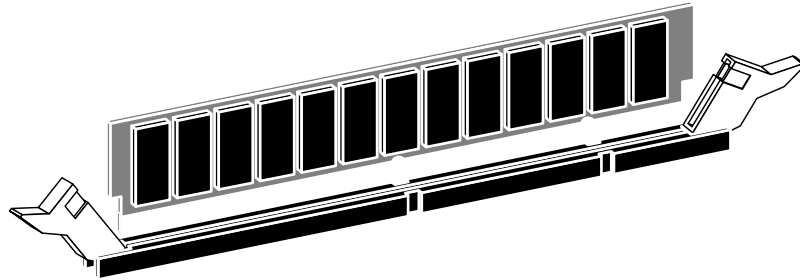


FIGURE 4-7 Releasing the DIMM levers

3. **Slide the DIMM straight out of the socket.**
4. **To replace a DIMM, gently slide the DIMM straight into the socket until the levers at each side lock into place.**

Make sure that the levers close securely around the ends of the DIMM and that each DIMM is fully seated in its socket.

If you removed the DIMMs completely, note that DIMMs fit the socket only one way. The notches on the bottom of the DIMM should line up with the notches in the socket.



# 4

## Restoring Print Controller X4(AR-PE1) functionality after service

### Restoring Print Controller X4(AR-PE1) functionality after service

#### TO REASSEMBLE THE PRINT CONTROLLER X4(AR-PE1)

1. Reseat all boards, cables, connectors, and other parts loosened or removed during inspection or service.
2. Place the Print Controller X4(AR-PE1) in its standard operating position. Place the side panel onto the Print Controller X4(AR-PE1) so the grooves on the bottom of the side panel fit into the grooves in the tray (see Figure 4-8).  
Be careful not to damage any ribbon cables; if necessary, fold the ribbon cables inside the tray before replacing the side panel.
3. Close the side panel. Two clips on the top edge of the panel will click when it is properly installed.

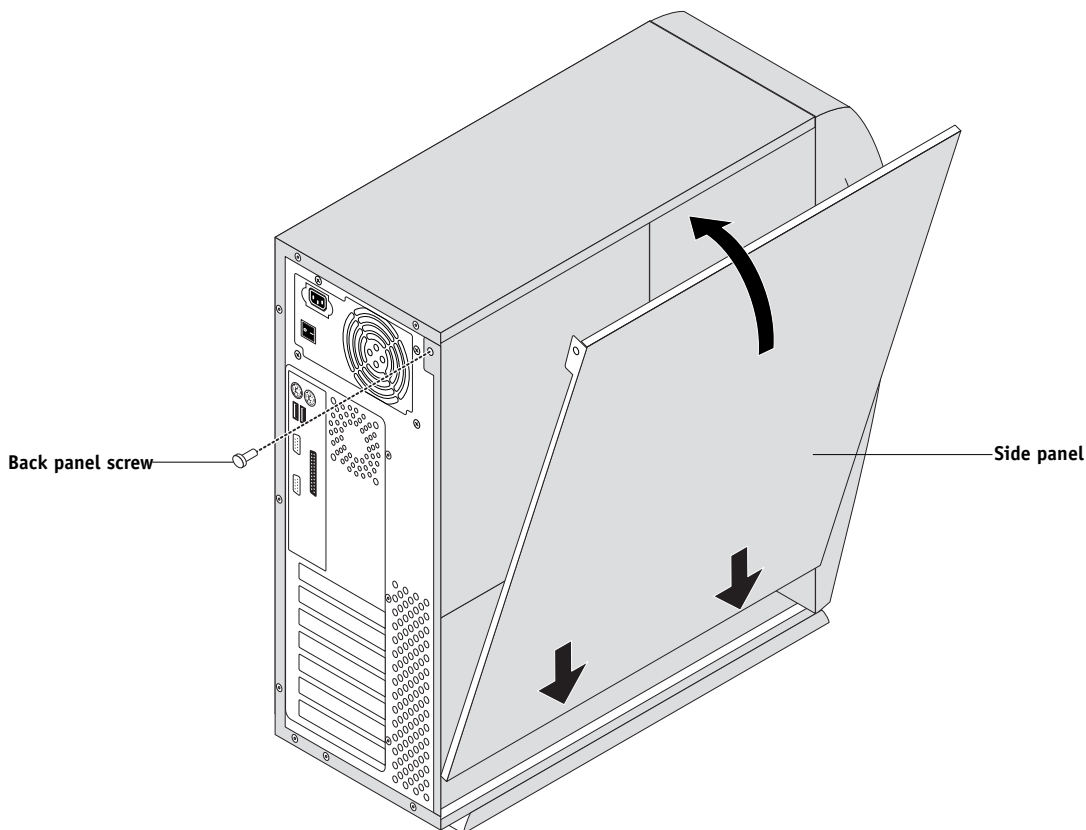


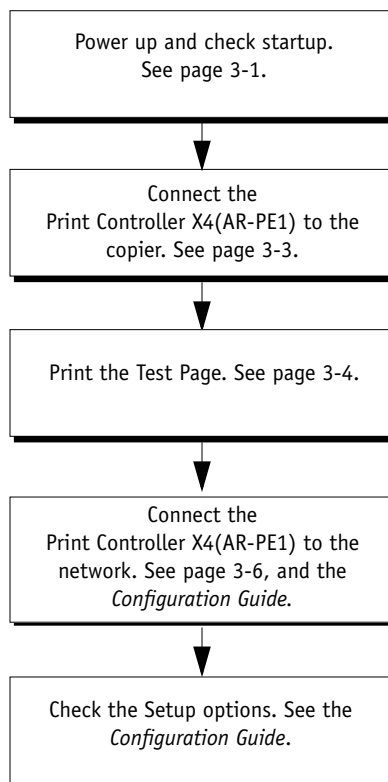
FIGURE 4-8 Replacing the side panel

# 4

## Service Procedures

**NOTE:** Do not leave the Print Controller X4(AR-PE1) side panel off after servicing. An airflow channel is created by the side panel and the fan. Leaving the Print Controller X4(AR-PE1) open could reduce the operational life expectancy of internal Print Controller X4(AR-PE1) components.

4. **Replace the screw that secures the side panel.**
5. **Replace the front panel if you removed it (see “To replace the front panel” on page 4-7).**
6. **Connect any cables removed during service to the back of the Print Controller X4(AR-PE1).**
7. **Before you leave the customer site, verify Print Controller X4(AR-PE1) operation as outlined in Figure 4-9.**



**FIGURE 4-9** Print Controller X4(AR-PE1) connection verification steps

# 4

## Removing and replacing boards

### Removing and replacing boards

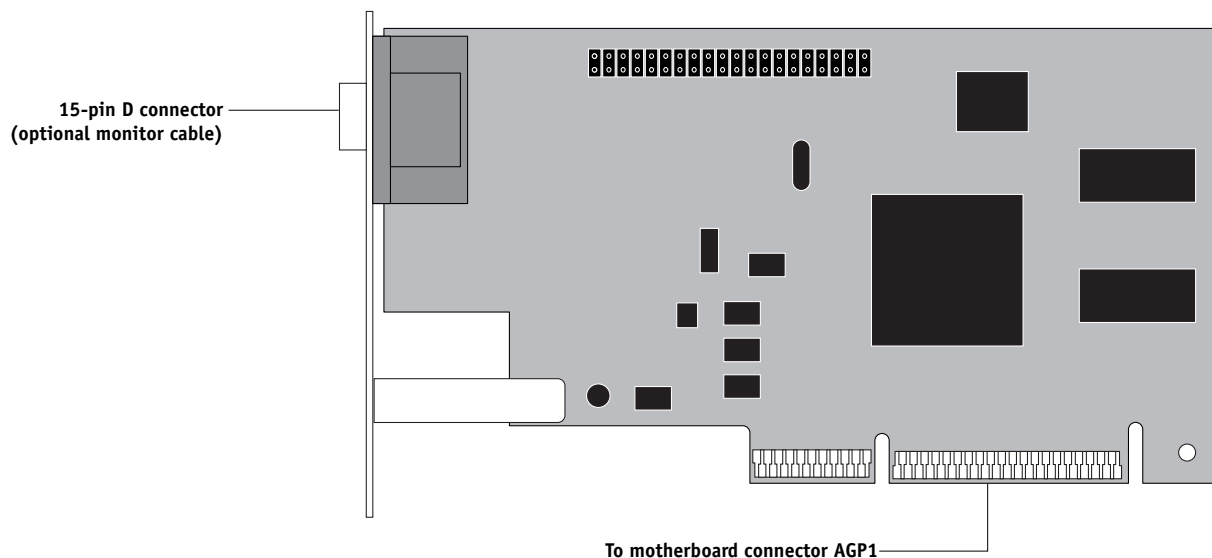
This section includes procedures for removing and replacing the following boards:

- AGP video board
- Copier interface board
- IX UIB board
- Ethernet board
- Motherboard

For information on installing option boards, see the separate installation instructions provided with that board.

#### AGP video board

The AGP (Accelerated Graphics Port) video board installed in the Print Controller X4(AR-PE1) provides connectivity to an optional monitor, which connects to the 15-pin D connector (occupying slot 1 on the back of the Print Controller X4(AR-PE1) tray) on the AGP board. The other connector on the board connects to motherboard connector AGP1.



**FIGURE 4-10** AGP video board layout

# 4

## Service Procedures

---

### TO REMOVE THE AGP VIDEO BOARD

1. Power off and open the Print Controller X4(AR-PE1) as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
2. Remove the board mounting bracket screw from slot 1.
3. Remove the AGP video board from motherboard connector AGP1.  
Grasp the board at the front and back edge and gently pull the board straight out of its connector on the motherboard.
4. Place the board in an antistatic bag.

---

### TO REPLACE THE AGP VIDEO BOARD

1. Reseat the AGP video board in motherboard connector AGP1. The component side of the board should be facing down towards the bottom of the tray.  
When replacing the AGP video board, slide it straight into the board guides. As you plug the board into AGP1, make sure that the board connectors are properly aligned with the motherboard connector. The board connector is keyed to fit only one way on the motherboard.
2. Attach the board mounting bracket screw to the bracket in slot 1.
3. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see the connection verification steps described in "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

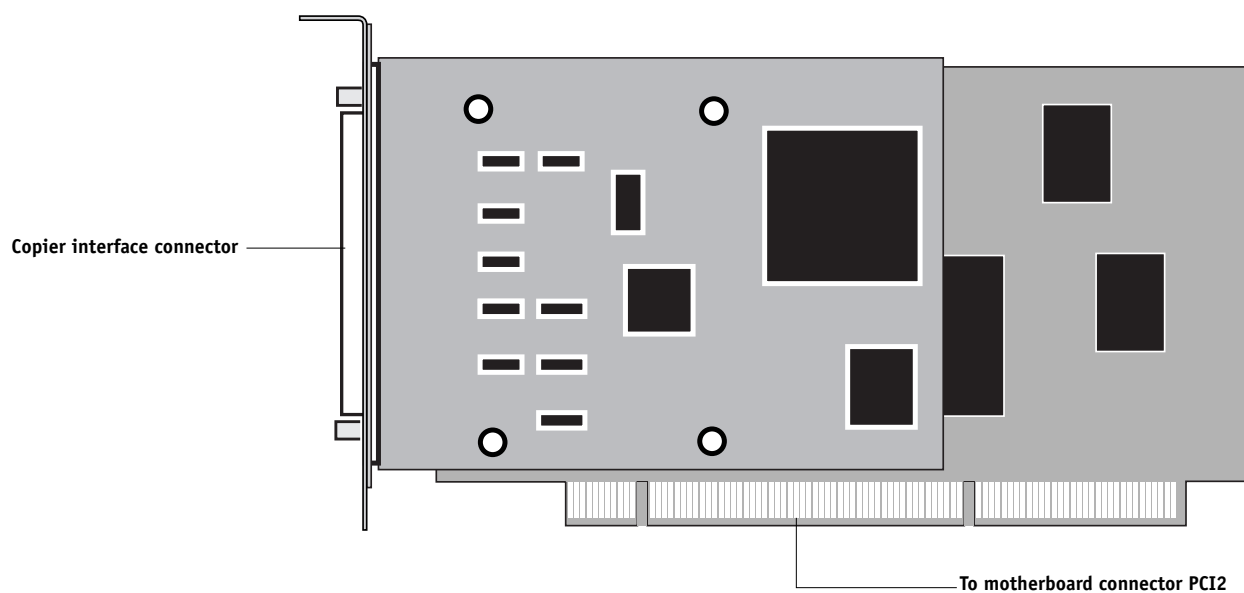
# 4

## Removing and replacing boards

### Copier interface board

The copier interface board in the Print Controller X4(AR-PE1) (see Figure 4-11) provides the interface between the Print Controller X4(AR-PE1) and the copier.

The board is installed in connector PCI2 on the motherboard. The copier interface connector on one side of the board occupies slot 3 on the back panel of the Print Controller X4(AR-PE1) and connects to the copier interface cable.



**FIGURE 4-11** Diagram of copier interface board (component side)

# 4

## Service Procedures

---

### TO REMOVE THE COPIER INTERFACE BOARD

1. Power off and open the Print Controller X4(AR-PE1) as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
2. Make sure the copier interface cable connected to the back of the Print Controller X4(AR-PE1) is removed.
3. Remove the board mounting bracket screw that secures the board.
4. Remove the copier interface board from motherboard connector PCI2.  
Grasp the board at the front and back edge and gently pull it straight out of its connector on the motherboard.
5. Place the board in an antistatic bag.

---

### TO REPLACE THE COPIER INTERFACE BOARD

1. Reseat the copier interface board in motherboard connector PCI2. The component side of the copier interface board should be facing down towards the bottom of the tray.  
When replacing the copier interface board, slide it straight into the board guides. As you plug the board into PCI2, make sure that the board connectors are properly aligned with the motherboard connector. The board connector is keyed to fit only one way on the motherboard.
2. Attach the board mounting bracket screws to the bracket.
3. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see the connection verification steps described in "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).  
Be sure to connect the copier interface cable to the connector in slot 3.

# 4

## Removing and replacing boards

### IX UIB board

The IX UIB board installed in motherboard connector PCI3 provides the interface between the LCD in the front panel and the motherboard. The UIB cable from the front panel attaches to connector J4 on the IX UIB board.

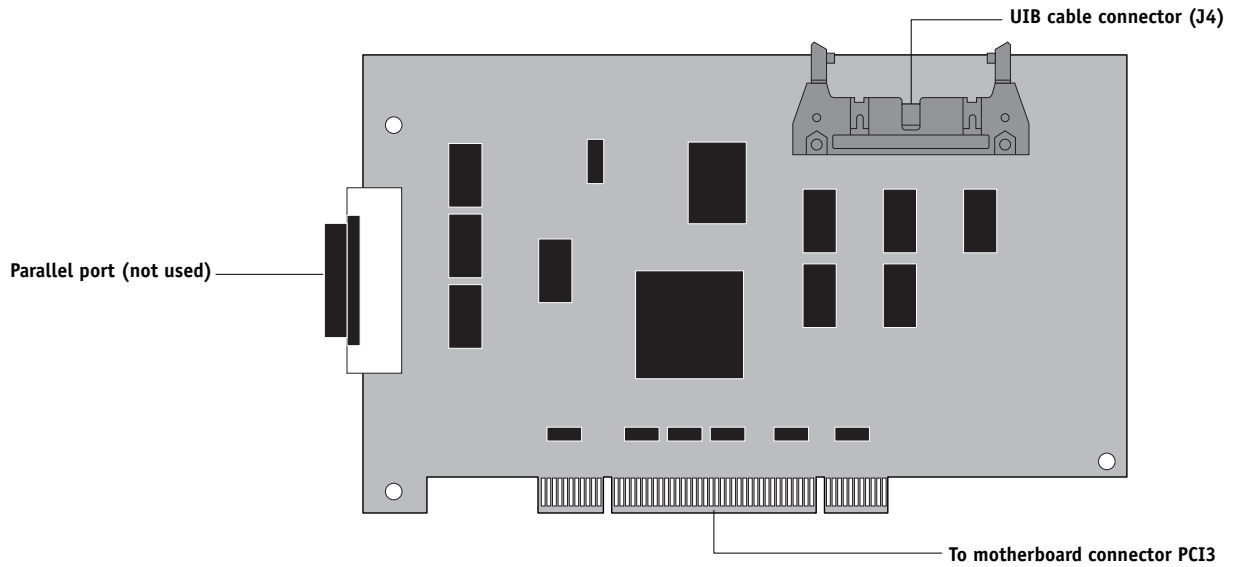


FIGURE 4-12 IX UIB board

# 4

## Service Procedures

---

### TO REMOVE THE IX UIB BOARD

1. Power off and open the Print Controller X4(AR-PE1) as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
2. Remove the UIB cable from connector J4 on the IX UIB board.
3. Remove the board mounting bracket screw from slot 4 and then remove the IX UIB board from motherboard connector PCI3.

Grasp the board at the front and back edge and gently pull it straight out of its connector.

4. Place the board in an antistatic bag.

---

### TO REPLACE THE IX UIB BOARD

1. Reseat the IX UIB board in connector PCI3 on the motherboard. Make sure that the parallel connector on the board extends through slot 4 in the back panel. The component side of the IX UIB board should be facing the bottom of the tray.

When replacing the IX UIB board, slide it straight into the board guides. As you plug the board into PCI3, make sure that the board connectors are properly aligned with the motherboard connector. The board connector is keyed to fit only one way on the motherboard.

2. Attach the board mounting bracket screw to the bracket in slot 4.
3. Connect the UIB cable to connector J4 on the IX UIB board.
4. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see the connection verification steps described in "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

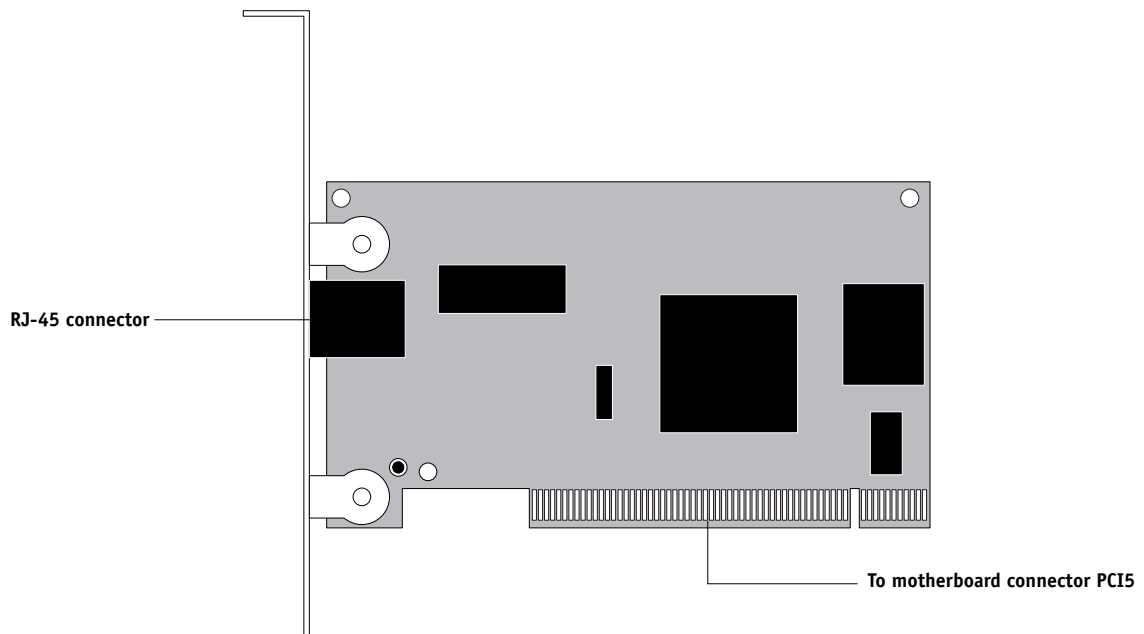


# 4

## Removing and replacing boards

### Ethernet board

The Ethernet board provides the interface between the Print Controller X4(AR-PE1) and the customer's network. The Ethernet board has one RJ-45 network connector for a 10/100BaseT unshielded twisted pair cable. The Ethernet board is installed in motherboard connector PCI5.



**FIGURE 4-13** Ethernet board connectors

# 4

## Service Procedures

---

### TO REMOVE THE ETHERNET BOARD

1. **Power off and open the Print Controller X4(AR-PE1) as described in “To shut down the Print Controller X4(AR-PE1)” on page 4-3 and “To open the Print Controller X4(AR-PE1)” on page 4-4.**

2. **Remove the board mounting bracket screw from slot 6, and then remove the Ethernet board from motherboard connector PCI5.**

Grasp the board at the front and back edge and gently pull it straight out of its connector on the motherboard.

3. **Place the board in an antistatic bag.**

---

### TO REPLACE THE ETHERNET BOARD

1. **Insert the Ethernet board into motherboard connector PCI5. The component side of the board should be facing down towards the bottom of the tray.**

When replacing the Ethernet board, slide it straight into the board guides. As you plug the board into PCI5, make sure that the board connectors are properly aligned with the motherboard connector. The board connector is keyed to fit only one way on the motherboard.

2. **Attach the board mounting bracket screw to the bracket in slot 6.**
3. **Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see the connection verification steps described in “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11).**

Be sure to connect the Ethernet cable to the connector in slot 6.

# 4 Motherboard

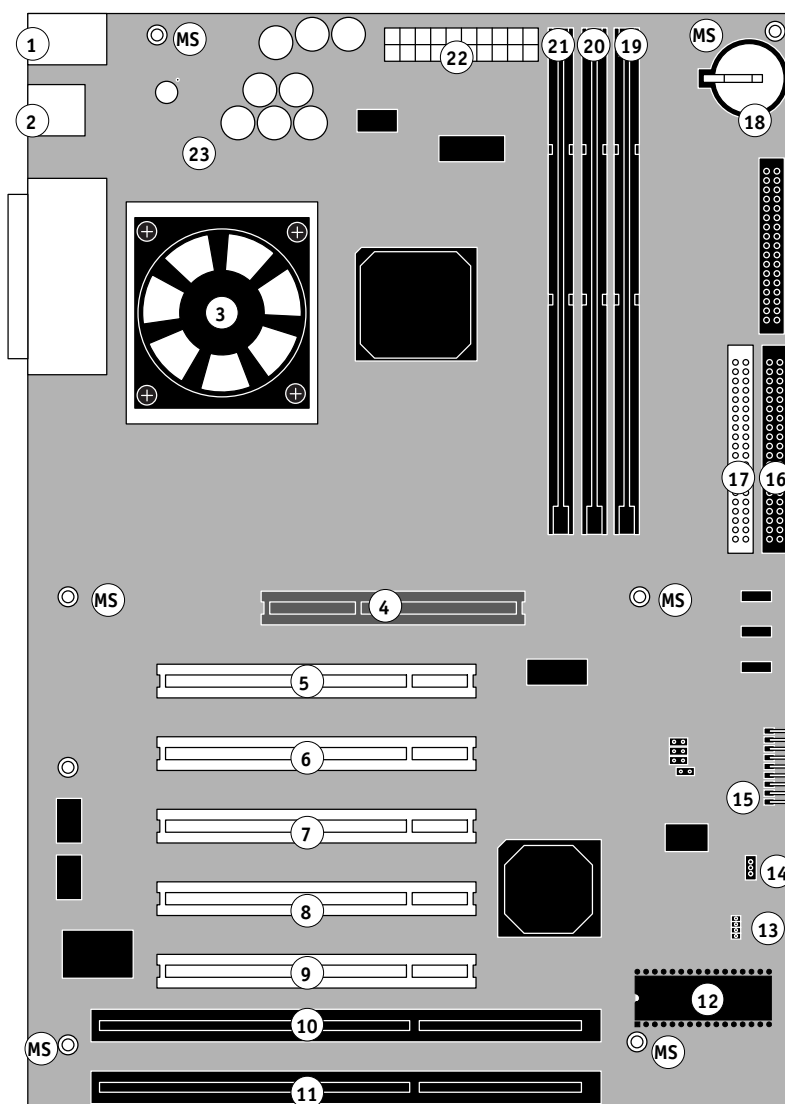
## Motherboard

The Print Controller X4(AR-PE1) motherboard has a 433MHz Intel Celeron CPU that controls the image data transferred to and from the copier interface board. The motherboard also controls HDD functions and the communication between the Print Controller X4(AR-PE1) and external devices. The motherboard has one 32-bit AGP connector, five 32-bit PCI connectors, and two 16-bit ISA connectors, as well as three DIMM sockets.

### Key

1. Optional keyboard/mouse connectors
2. USB connector (not used)
3. 433MHz CPU, heatsink, and CPU fan
4. AGP video board connector (AGP1)
5. Empty (PCI1)
6. Copier interface board connector (PCI2)
7. IX UIB board connector (PCI3)
8. Option board connector (PCI4)
9. Ethernet board connector (PCI5)
10. Empty (ISA1)
11. Empty (ISA2)
12. BIOS chip (U8)
13. Speaker cable pins (SPKR)
14. Front panel fan cable connector (CFAN)
15. Reset and power switch cable pins
16. ZIP drive cable connector (SIDE)
17. IDE cable connector (IDE1)
18. Battery (BT1)
19. DIMM socket (DIMM3)
20. DIMM socket (DIMM2)
21. DIMM socket (DIMM1)
22. 20-pin motherboard power supply cable connector (PWR CON)
23. CPU fan cable connector (CPU FAN)
- MS—Mounting holes (6 holes)

**NOTE:** Connectors not listed above are not used.



**FIGURE 4-14** Diagram of the Print Controller X4(AR-PE1) motherboard

# 4

## Service Procedures

### Removing the Print Controller X4(AR-PE1) motherboard

Before you remove the motherboard, you must remove:

- All boards installed on the motherboard
- All cables connected to the motherboard

Procedures are included in this section for each of the requirements listed above. This section also includes information on replacing the battery and DIMMs on the motherboard, as well as information on motherboard jumper configurations.

**NOTE:** Take ESD precautions and be very careful when handling the Print Controller X4(AR-PE1) boards.

---

#### TO REMOVE BOARDS FROM THE MOTHERBOARD

1. **Power off the Print Controller X4(AR-PE1) and remove the side panel as described on page 4-4.**
2. **Remove the board mounting bracket screws for boards occupying back panel slots.**
3. **Remove the following boards from the motherboard and place each board on an antistatic surface:**
  - AGP board in connector AGP1
  - Copier interface board in connector PCI2
  - IX UIB board in connector PCI3  
Remove the UIB cable from connector J4 on the IX UIB board before removing it.
  - Token Ring board in connector PCI4 (if installed)
  - Ethernet board in connector PCI5
4. **Remove any option boards installed in remaining connectors on the motherboard.**

# 4

## Motherboard

---

### TO REMOVE MOTHERBOARD CABLES

1. Remove the power supply cable from PWR CON.
2. Remove the IDE cable from connector PIDE on the motherboard.
3. Remove the ZIP drive cable from connector SIDE on the motherboard.
4. Remove the front panel fan cable from connector CFAN on the motherboard.
5. Remove the power switch cables from pins PWR on the motherboard.
6. Remove the reset cable from pins RST.
7. Remove the speaker cables from pins SPKR.

---

### TO REMOVE THE MOTHERBOARD

1. If you are replacing the motherboard, remove the following from the motherboard:
  - Memory (see page 4-26)
  - CPU, heatsink, and CPU fan (see page 4-28)
  - BIOS chip (see page 4-29)
2. Using a #2 Phillips head screw driver, remove the six motherboard mounting screws.
3. Gently slide the motherboard out of the back panel cutouts.

Make sure the back panel connectors on the motherboard clear the tray as you remove the board. Make sure to avoid handling contacts and avoid using excessive force.
4. Lift the motherboard out of the tray.

# 4

## Service Procedures

### Replacing the motherboard

This section includes the procedures required to replace the Print Controller X4(AR-PE1) motherboard. Spare motherboards ship without memory, CPU, or the BIOS chip. The memory, CPU, and BIOS chip from the old board will need to be installed on the replacement motherboard.

---

#### TO REPLACE THE MOTHERBOARD

1. **Place the motherboard in the tray and insert the motherboard so that the back panel connectors on the motherboard fit into the cutouts in the back of the tray. Make sure that the clip in the tray fits over the USB connector.**
2. **Align the mounting holes in the motherboard with the standoffs in the tray.**
3. **Replace the six motherboard mounting screws that attach the motherboard to the tray.**
4. **If you replaced the motherboard with a new board, replace the following components on the board:**
  - Memory (see page 4-26)
  - CPU, heatsink, and CPU fan (see page 4-28)
  - BIOS chip (see page 4-29)

---

#### TO REPLACE BOARDS

1. **Replace the following boards in the motherboard:**
  - AGP video board in connector AGP1
  - Copier interface board in connector PCI2
  - IX UIB board in connector PCI3
  - If the Token Ring board is installed, reseal it in connector PCI4
  - Ethernet board in connector PCI5
2. **Reseat any option boards installed in remaining connectors on the motherboard.**

When replacing boards, slide them straight into the board guides. As you plug the boards into the connectors on the motherboard, make sure that the board connectors are properly aligned with the connectors on the motherboard. The connectors on the boards are keyed to fit only one way on the motherboard.

# 4

## Motherboard

---

### TO REPLACE THE MOTHERBOARD CABLES

1. Reseat the power supply cable to motherboard connector PWR CON.
2. Connect the IDE cable to connector PIDE on the motherboard.
3. Connect the ZIP drive cable to connector SIDE on the motherboard.
4. Connect the front panel fan cable to connector CFAN on the motherboard.
5. Connect the power switch LED cable to pins PWR.
6. Connect the reset cable to pins RST.
7. Connect the speaker cables to pins SPKR.

---

### TO COMPLETE AND VERIFY MOTHERBOARD INSTALLATION

1. If you replaced the motherboard, insert the BIOS chip with the socket mount from the motherboard you removed into the BIOS socket on the replacement board.
2. Attach the board mounting bracket screws for boards installed in back panel slots.  
**NOTE:** Make sure unused slots have slot covers installed. Uncovered slots reduce air flow and could cause the Print Controller X4(AR-PE1) to overheat.
3. Press down on each cable connector and verify that all cables are attached properly.
4. Check motherboard jumper settings. See "Motherboard jumpers" on page 4-31.
5. Reassemble the Print Controller X4(AR-PE1) and verify functionality (see the connection verification steps described in "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

# 4

## Service Procedures

### Replacing parts on the motherboard

This section describes how to remove and replace DIMMs and the battery on the motherboard. Before performing any of these procedures, you must first power off the Print Controller X4(AR-PE1) as described in “To shut down the Print Controller X4(AR-PE1)” on page 4-3, and remove the side panel as described in “To open the Print Controller X4(AR-PE1)” on page 4-4.

#### DIMMs

The Print Controller X4(AR-PE1) motherboard has three DIMM sockets (DIMM1, DIMM2, DIMM3) with 192MB installed.

Approved DIMMs are available from your service representative.

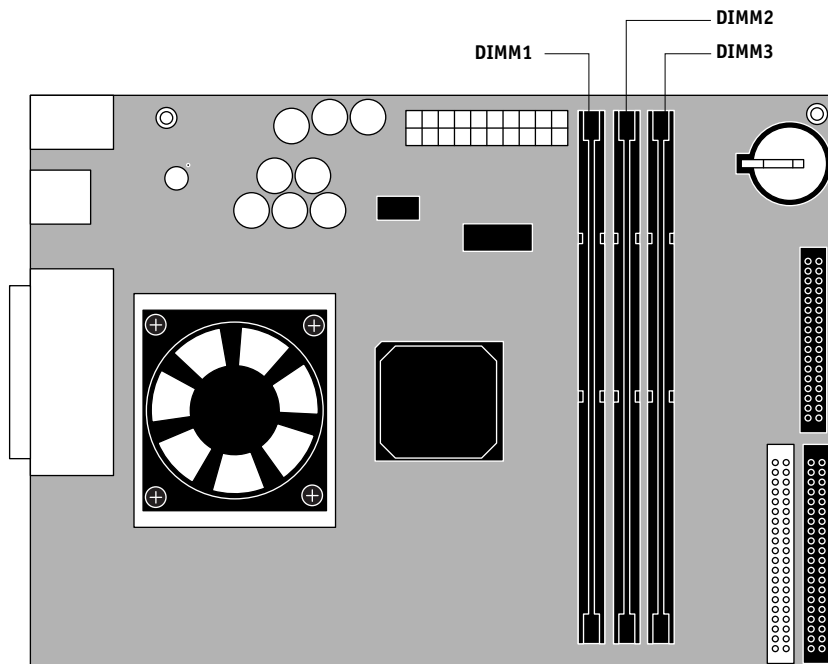


FIGURE 4-15 Motherboard DIMM sockets



### TO REPLACE A DIMM

1. To release a DIMM, push outward on the levers on each side of the DIMM (see Figure 4-16.)

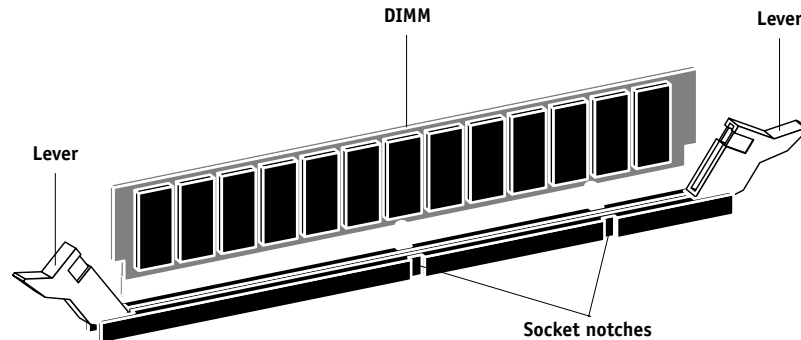


FIGURE 4-16 Releasing a DIMM

2. Slide the DIMM straight out of the socket.
3. To replace a DIMM, slide it straight into the socket until the levers on each side lock into place.

Make sure that the levers close securely around the ends of the DIMM and that each DIMM is fully seated in its socket.

**NOTE:** DIMMs fit the socket only one way. The two notches on the bottom of each DIMM should line up with the notches in the socket.

4. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

### Motherboard CPU

The CPU chip on the motherboard is installed in a socket (see Figure 4-14 on page 4-21). The socket that holds the CPU on the motherboard is a Zero Insertion Force (ZIF) socket that allows the chip to be removed. Pin 1 on the ZIF socket is denoted by an angled corner.

---

#### TO REPLACE THE CPU

1. Remove the CPU fan and heatsink as described in “To remove the CPU fan and heatsink” on page 4-34.
2. Lift the lever to release the CPU from the socket (see Figure 4-17).

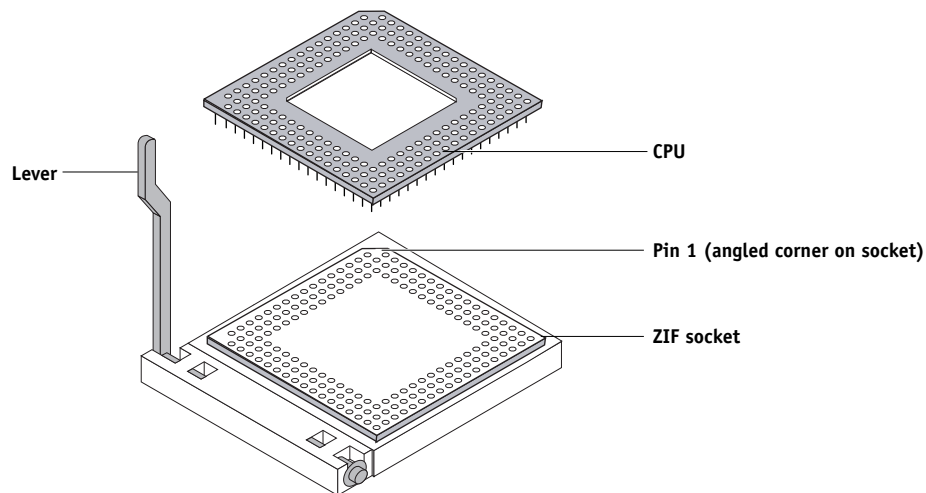


FIGURE 4-17 Removing the CPU

3. Grasp the edges of the CPU and gently pull it out of the socket.
4. Insert the new CPU so that the notch on the chip lines up with the notch area on the socket.

Pin 1 on the CPU is denoted by an angled corner. The angled corner should point to the small 1 printed on the board directly below the CPU socket.
5. Push down the socket lever to secure the CPU.
6. Replace the CPU fan and heatsink as described in “To replace the CPU fan” on page 4-34.

# 4

## Motherboard

### BIOS chip

The BIOS chip is located in socket U8 on the motherboard. The BIOS chip contains boot information, such as the startup diagnostics that the Print Controller X4(AR-PE1) uses when you power on the system.

---

#### TO REPLACE THE BIOS CHIP

1. Locate the BIOS chip on the motherboard (socket U8).
2. Using a PROM extractor, remove the BIOS chip from its socket on the motherboard.
3. To replace the BIOS chip insert it into the socket so that the notch in the chip is aligned with the notch in the socket.

Make sure to align the pins on the chip with the holes in the socket. If you notice any bent pins, straighten them gently with a pair of needlenose pliers.

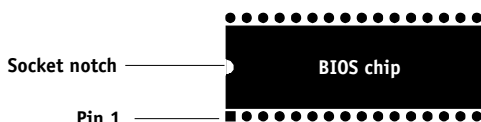


FIGURE 4-18 Diagram of BIOS chip socket

4. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11).

### Motherboard battery

The battery on the motherboard is located at BT1. To replace it, use a 3V manganese dioxide lithium coin cell battery (Panasonic CR2032 or equivalent).



**CAUTION:** There is danger of explosion if the battery is replaced with the incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

**ACHTUNG:** Es besteht Explosionsgefahr, wenn die Batterie durch eine Batterie falschen Typs ersetzt wird. Als Ersatz dürfen nur vom Hersteller empfohlene Batterien gleichen oder ähnlichen Typs verwendet werden. Verbrauchte Batterien müssen entsprechend den Anweisungen des Herstellers entsorgt werden.

**ATTENTION:** Il y a risque d'explosion si la pile est remplacée par un modèle qui ne convient pas. Remplacez-la uniquement par le modèle recommandé par le constructeur. Débarrassez-vous des piles usées conformément aux instructions du constructeur.

### TO REPLACE THE MOTHERBOARD BATTERY

1. Locate the battery on the motherboard at BT1 (key location 18 in Figure 4-14 on page 4-21).

2. Carefully lift up the clip that holds the battery.

Use caution when lifting up the clip; excessive force could cause the clip to lose its tension.

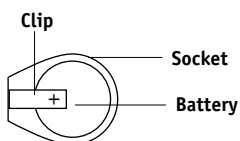


FIGURE 4-19 Motherboard battery

3. Pull the battery out of its socket and release the clip.
4. To insert a new battery, slide the battery into the socket under the clip with the positive (+) side facing up.

Make sure the clip holds the battery securely in the socket.

5. Reassemble the Print Controller X4(AR-PE1) and verify its functionality as described on page 4-11.

**NOTE:** When you power on the Print Controller X4(AR-PE1), let the Start-up diagnostics complete, then power off and on again to reinitialize the realtime clock.







6. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).
7. Configure the time and date in Setup.

# 4 Motherboard

## Motherboard jumpers

The following section describes the locations and settings for the jumpers on the motherboard.

**NOTE:** The jumpers in the table below show the current shipping configuration.

Jumper	Jumper area (shipping configuration)	Description
JP1		<ul style="list-style-type: none"> <li>Bus speed settings</li> </ul> Jumper installed on pins 1 and 2.
JP2		<ul style="list-style-type: none"> <li>Clear CMOS and reset password</li> </ul> Jumper installed on pins 1 and 2 during normal operation. To reset the CMOS to the BIOS defaults, move the jumper to pins 2 and 3, reboot, and then replace jumper to pins 1 and 2.
JP10		<ul style="list-style-type: none"> <li>CPU speed settings</li> </ul> Jumper installed on pins 1 and 2. This setting should not be changed.
JP11		<ul style="list-style-type: none"> <li>CPU speed settings</li> </ul> Jumper installed on pins 1 and 2. This setting should not be changed.
JP12		<ul style="list-style-type: none"> <li>CPU speed settings</li> </ul> Jumper installed on pin 1. This setting should not be changed.
JP13		<ul style="list-style-type: none"> <li>CPU speed settings</li> </ul> Jumper installed on pin 1. This setting should not be changed.

# 4

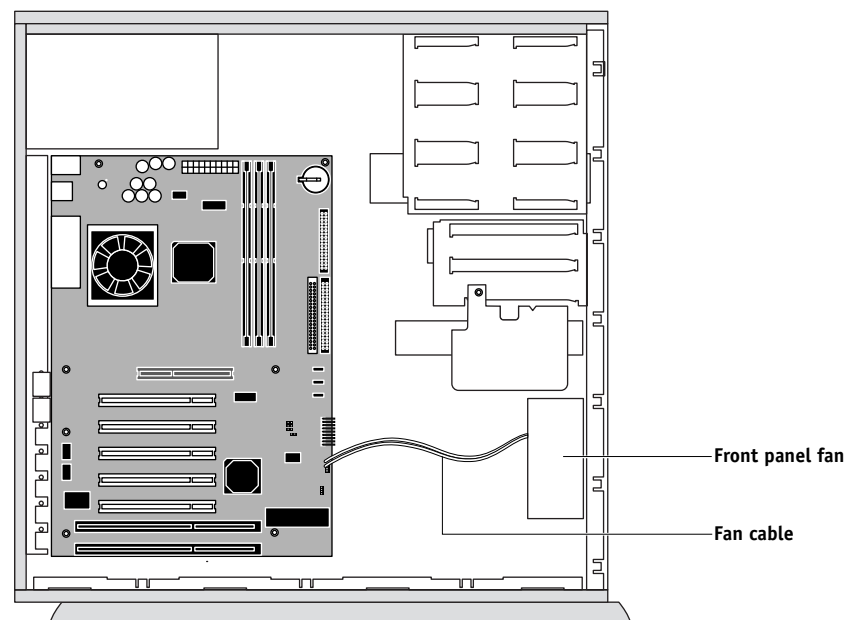
## Service Procedures

### Fans

A fan on the front panel of the Print Controller X4(AR-PE1) and a fan on the motherboard CPU run continuously when the system is on. You should hear the fans start as soon as you power on the Print Controller X4(AR-PE1). If you don't hear the fans or a fan error message is displayed on the Control Panel, the most likely problem is a faulty power connection (see “To check board and cable connections” on page 4-8).

#### Front panel fan

The following steps describe the procedure required in order to replace the fan installed on the front panel of the Print Controller X4(AR-PE1). The fan is held in the tray with clips. The front panel fan cable attaches to motherboard connector CFAN.



**FIGURE 4-20** Removing the fan

# 4

## Fans

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### TO REMOVE THE FRONT PANEL FAN

1. Power off and open the Print Controller X4(AR-PE1), as described in “To shut down the Print Controller X4(AR-PE1)” on page 4-3 and “To open the Print Controller X4(AR-PE1)” on page 4-4.
2. Unplug the 3-pin fan connector from motherboard connector CFAN.
3. Grasp the fan housing and gently pull it out of its holes on the front panel.
4. Remove the fan housing (with the fan attached) from the tray.
5. Press the back of the fan until it releases from the fan housing, and then remove the fan cable from the fan housing.

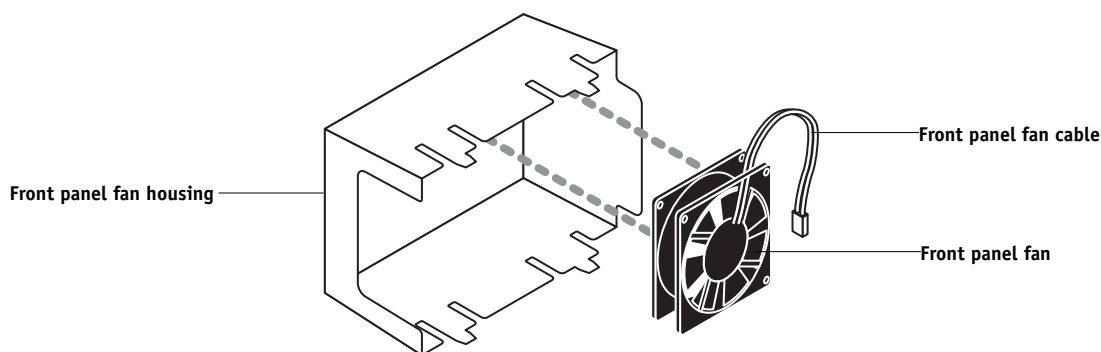


FIGURE 4-21 Removing the fan from the housing

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### TO REPLACE THE FRONT PANEL FAN

1. Insert the new fan into the fan housing, and then press the fan cable into place in the fan housing.  
An arrow on the side of the fan indicates the airflow direction. Make sure the fan is positioned so that the arrow points toward the interior of the chassis.
2. Align the fan housing clips with the holes in the front panel and then press the fan housing into place.
3. Plug the 3-pin fan connector into motherboard connector CFAN.
4. Reassemble the Print Controller X4(AR-PE1) and verify functionality (see the steps described in “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11).

### CPU fan

The following steps describe the procedure required in order to replace the 12V CPU fan and heatsink assembly. A clip holds the assembly to the CPU socket.

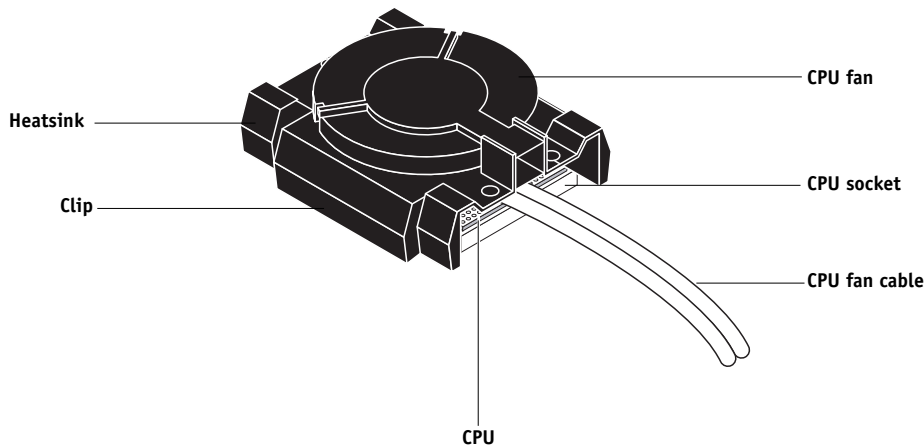


FIGURE 4-22 Removing the CPU fan (clip not shown)

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#### TO REMOVE THE CPU FAN AND HEATSINK

1. Remove the CPU fan cable from motherboard connector CPU FAN.
2. Press down and hold the clip at the top of the CPU fan.
3. Lift the fan and heatsink assembly away from the CPU.

---

#### TO REPLACE THE CPU FAN

1. Align the CPU fan with the heatsink and then press the assembly onto the motherboard.
2. Reattach the CPU fan cable to motherboard connector CPU FAN.
3. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).



# 4

## Power supply

### Power supply

The fan-cooled 155 watt power supply used in the Print Controller X4(AR-PE1) has an automatic input voltage selection circuit. The input voltages are 100-240VAC.

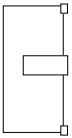


### Checking voltages

You can check power supply functionality using a multimeter at the following locations:

- Connector that supplies power to the motherboard
- Connector that supplies power to the CD-ROM drive
- Connector for future options

Test voltages on the cable connectors on the power supply, not on the board or component connectors. Table 4-1 describes the Print Controller X4(AR-PE1) power connectors.




**TABLE 4-1** Print Controller X4(AR-PE1) power connectors

Connector	Pins	Color	Voltage
 20-pin Motherboard	1, 2, 11	Green	3.3V
	3, 5, 7, 13, 15, 16, 17	Black	common
	18	White	-5V (not connected)
	4, 6, 19, 20	Red	+5V
	10	Yellow	+12V
	12	Blue	-12V
	14	—	not connected
	8	—	Supply Power OK
	9	Red	+5VSB
 Large 4-pin CD-ROM drive	1	Yellow	+12V
	2	Black	common
	3	Black	common
	4	Red	+5V
 Large 4-pin HDD	1	Yellow	+12V
	2	Black	common
	3	Black	common
	4	Red	+5V

# 4

## Service Procedures

**TABLE 4-1** Print Controller X4(AR-PE1) power connectors

 Large 4-pin ZIP drive	1	Yellow	+12V
	2	Black	common
	3	Black	common
	4	Red	+5V
 Large 4-pin (not used)	1	Yellow	+12V
	2	Black	common
	3	Black	common
	4	Red	+5V
 Small 4-pin (not used)	1	Yellow	+12V
	2	Black	common
	3	Black	common
	4	Red	+5V

### Removing and replacing the power supply

This section describes how to remove and replace the power supply.

#### TO REMOVE THE POWER SUPPLY

1. Power off and open the Print Controller X4(AR-PE1) as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
2. Disconnect the power supply cable from its connectors on the motherboard, ZIP drive, HDD, and CD-ROM drive.
3. Remove the four screws on the back panel of the Print Controller X4(AR-PE1) that attach the power supply to the tray (see Figure 4-23 on page 4-37).

**NOTE:** Be sure to hold the power supply while you remove the screws.

4. Remove the power supply.

# 4

## Power supply

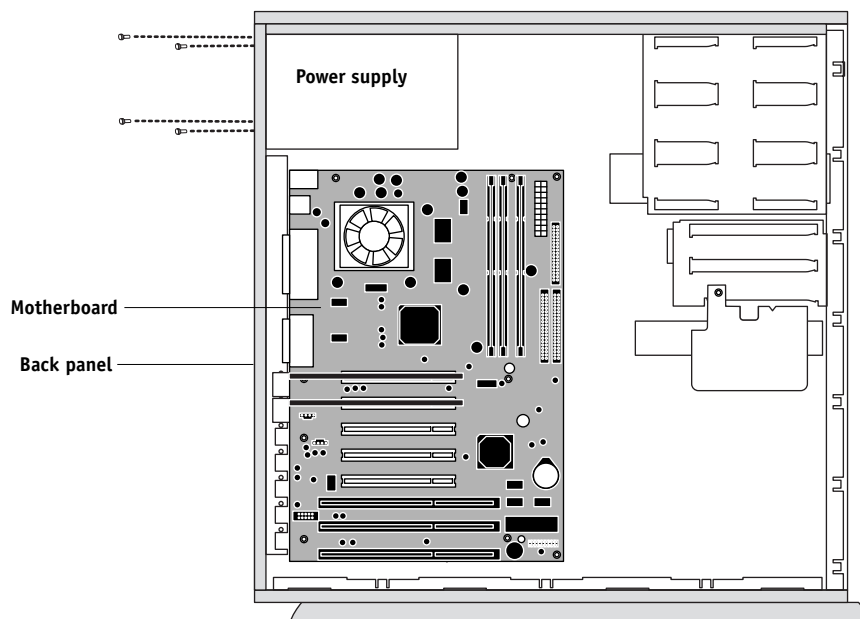


FIGURE 4-23 Removing the power supply

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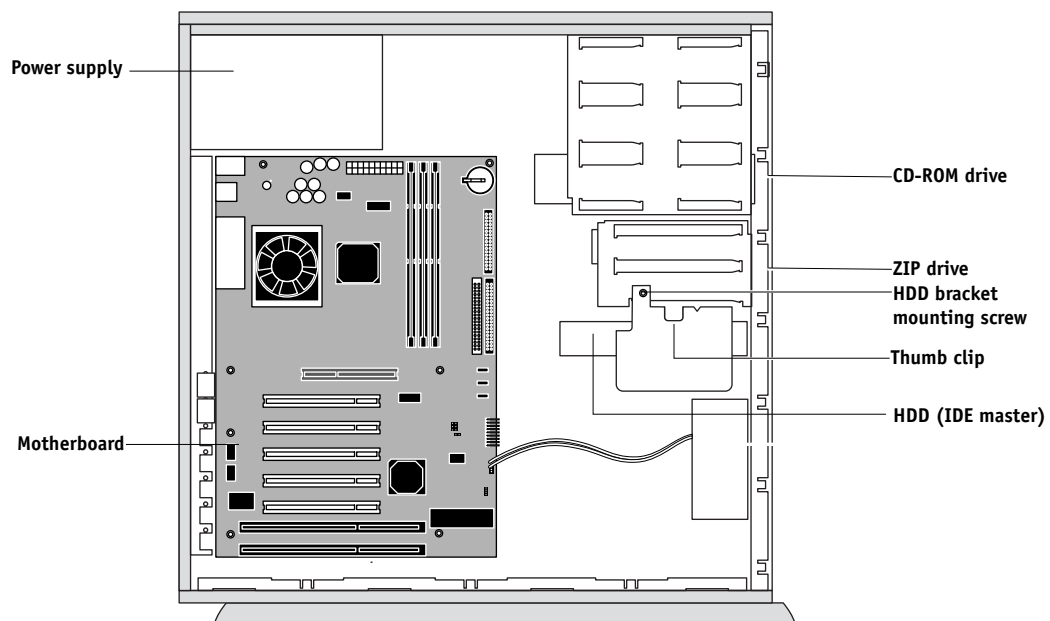
### TO REPLACE THE POWER SUPPLY

1. Align the power supply with the mounting holes in the tray.
2. Replace the four mounting screws you removed earlier.
3. Connect the following power supply cable connectors:
  - 20-pin power cable to the motherboard power connector (PWR CON).
  - Large 4-pin power cable to the power connector on the ZIP drive.
  - Large 4-pin power cable to the power connector on the CD-ROM drive.
  - Large 4-pin power cable to the power connector on the HDD.
4. Reassemble the Print Controller X4(AR-PE1) and verify its functionality (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

If you cut any tie wraps, make sure you replace them.

### Hard disk drive

The factory-installed HDD (hard disk drive) in the Print Controller X4(AR-PE1) is formatted and loaded with Print Controller X4(AR-PE1) system software, including the network drivers and Print Controller X4(AR-PE1) printer fonts. The HDD is also used to store spooled print jobs. Available space on the HDD is displayed on the Control Panel. The HDD is installed in the bracket in the front of the tray.



**FIGURE 4-24** Print Controller X4(AR-PE1) HDD (hard disk drive)

If you are replacing the HDD, you will need:

- The appropriate Print Controller X4(AR-PE1) system software including documentation for the Print Controller X4(AR-PE1) you are servicing
- Compatible version of the user software for networked computers that will be printing to the Print Controller X4(AR-PE1)

# 4

## Hard disk drive

---

### TO REMOVE THE HDD

1. If you are replacing the HDD with a new drive, print the following from the Functions menu:
  - Configuration page —records the customer's current Setup configuration.  
If you are installing a new drive you will need to reinstall system software. The Setup configuration will be reset to the default configuration when HDD is replaced.
  - Font List— details the fonts that are resident on the Print Controller X4(AR-PE1) HDD. The installed fonts will need to be reinstalled when the HDD is replaced.
2. Power off and open the Print Controller X4(AR-PE1), as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
3. Remove the IDE cable from the CD-ROM drive and the HDD.
4. Remove the mounting screw on the top of the HDD bracket (see Figure 4-24 on page 4-38).
5. Push down and hold the thumb clip on the top of the HDD bracket and then slide the HDD (with bracket attached) out of the rails that hold it in place in the tray.
6. Remove the four screws that secure the HDD to the bracket.

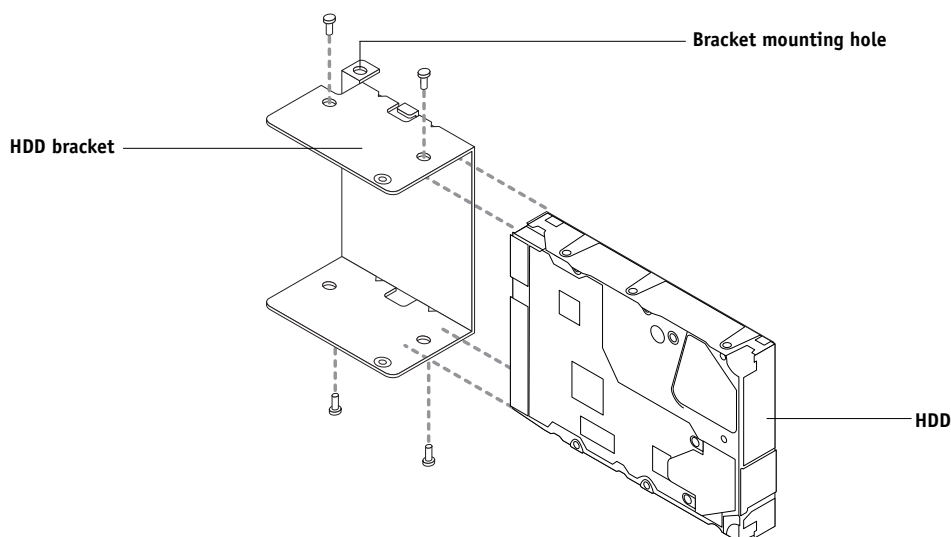


FIGURE 4-25 Removing the HDD from the HDD bracket

7. Remove the HDD and place it on an antistatic surface.

# 4

## Service Procedures

Replacement hard disk drives are not shipped with any Print Controller X4(AR-PE1) software pre-installed. After installing the new drive, you need to install the appropriate Print Controller X4(AR-PE1) system software.

---

### TO REPLACE THE HDD



**1. If you are installing a new HDD, unpack the drive.**

Do not unscrew the six screws on the rounded side of the HDD. Loosening these HDD screws will break the seal and void the HDD warranty.

Do not touch the HDD with magnetic objects (such as magnetic screwdrivers) and avoid placing items such as credit cards and employee ID cards that are sensitive to magnets near the HDD.

**2. Insert the HDD in the bracket and align the holes. Secure the HDD with the 4 screws.**

Make sure the IDE setting for the HDD is set to master.

**NOTE:** Make sure that the connector on the HDD is below the bracket mounting hole.

**3. Align the guides on the top of the HDD bracket with the rails in the mounting hardware in the tray and then slide the bracket into the hardware. The thumb clip will click into place when the drive is installed correctly.**

**4. Once the HDD bracket is securely installed in the mounting hardware in the tray, insert the mounting screw on the top of the HDD bracket.**

**5. Replace the IDE cable to its connector on the HDD, and then to its connector on the CD-ROM drive.**

**6. Replace the power supply cable to its connector on the HDD.**

**7. Reassemble the Print Controller X4(AR-PE1) (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11) and re-establish the connections at the back of the Print Controller X4(AR-PE1).**

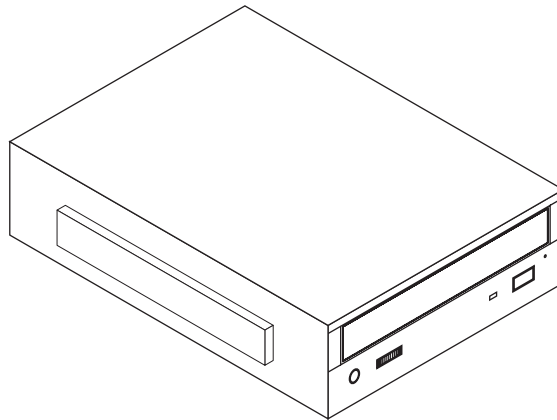
**8. If you replaced the HDD with a new drive, install Print Controller X4(AR-PE1) system software (see "Print Controller X4(AR-PE1) system software service" on page 4-45).**

# 4

## CD-ROM drive

### CD-ROM drive

The CD-ROM drive is installed in the tray above the ZIP drive and is used to install Print Controller X4(AR-PE1) system software.



**FIGURE 4-26** Print Controller X4(AR-PE1) CD-ROM drive

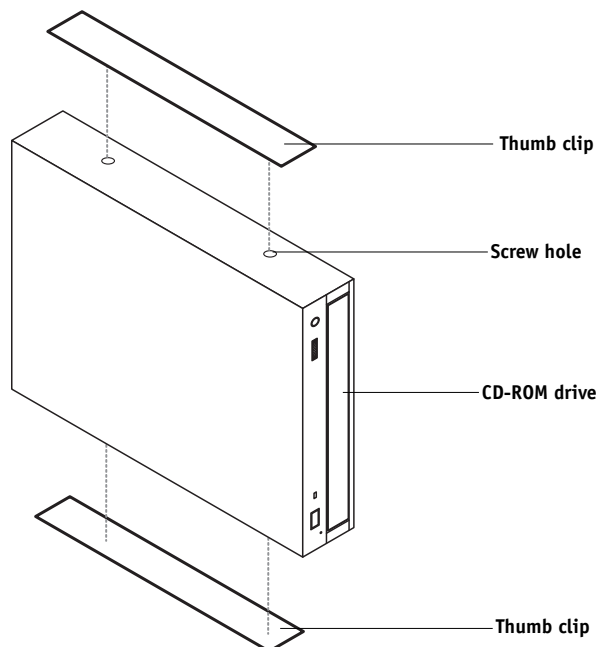
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#### TO REMOVE THE CD-ROM DRIVE

1. Power off the Print Controller X4(AR-PE1), as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3
2. Remove the front panel as described in "To remove the front panel" on page 4-6.
3. Remove the IDE cable connected to the back of the CD-ROM drive.
4. Remove the power supply cable connected to the CD-ROM drive.
5. Cut any tie wraps that hold the power supply cable to the drive bracket.
6. Squeeze and hold the thumb clips on the sides of the CD-ROM drive and then slide the drive out of the front of the tray.

### TO REPLACE THE CD-ROM DRIVE

1. If you are replacing the CD-ROM drive with a new drive, remove the thumb clips from the sides of the old drive. Install the clips on the new drive by inserting the tabs into the screw holes on the drive.



**FIGURE 4-27** Installing the clips on the new CD-ROM drive

2. Slide the drive into the bottom large slot in the tray and push it in until the thumb clips click into place.  
Make sure the IDE setting for the CD-ROM drive is set to slave.
3. Replace any tie wraps that you removed earlier.
4. Connect the power supply cable to its connector on the back of the CD-ROM drive.
5. Connect the IDE cable to its connector on the back of the drive.
6. Reassemble the Print Controller X4(AR-PE1) (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).



# 4 ZIP drive

## ZIP drive

The ZIP drive is installed in the tray below the CD-ROM drive.

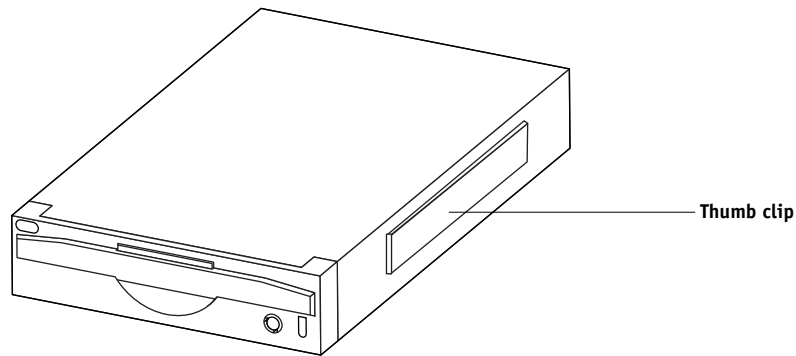


FIGURE 4-28 ZIP drive

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### TO REMOVE THE ZIP DRIVE

1. Power off and open the Print Controller X4(AR-PE1), as described in "To shut down the Print Controller X4(AR-PE1)" on page 4-3 and "To open the Print Controller X4(AR-PE1)" on page 4-4.
2. Remove the front panel as described in "Removing the front panel" on page 4-6.
3. Remove the ZIP drive cable connected to the back of the ZIP drive.
4. Remove the power supply cable connected to the ZIP drive.  
Cut any tie wraps that hold the power supply cable to the ZIP drive bracket.
5. Squeeze and hold the thumb clips on the sides of the ZIP drive and then slide the drive out of the front of the tray.

# 4

## Service Procedures

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### TO REPLACE THE ZIP DRIVE

1. If you are replacing the ZIP drive with a new drive, remove the thumb clips from the sides of the old drive. Install the clips on the new drive by inserting the tabs into the screw holes on the drive.

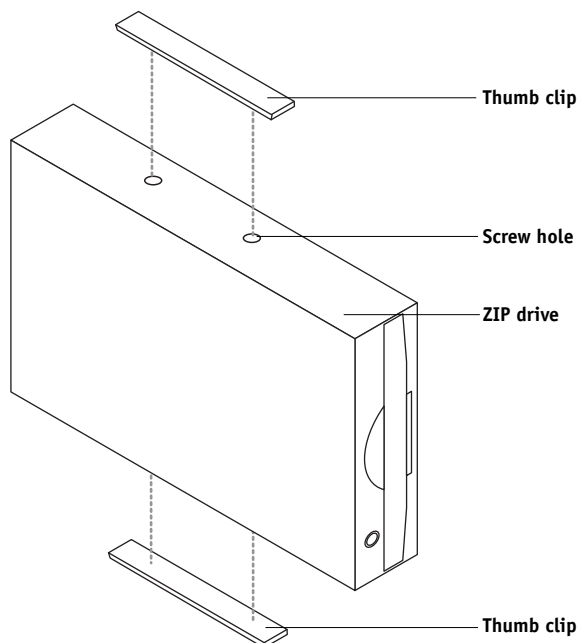


FIGURE 4-29 Installing the clips on the new ZIP drive

2. Slide the drive into the top small mounting bracket in the front of the tray and push it in the slot until the thumb clips click into place.
3. Connect the ZIP drive cable to its connector on the back of the ZIP drive.
4. Connect the power supply cable to its connector on the back of the ZIP drive.
5. Replace any tie wraps that you removed earlier.
6. Reassemble the Print Controller X4(AR-PE1) (see "Restoring Print Controller X4(AR-PE1) functionality after service" on page 4-11).

## Print Controller X4(AR-PE1) system software service

Print Controller X4(AR-PE1) system software resides on the HDD and is backed up the first time you power on the Print Controller X4(AR-PE1) from the factory. If necessary, you can retrieve the backup using the Restore Backup function in the Service menu (see page 4-46). This will restore system software to the default configuration.

System software is also provided on CD. Each language-specific System Software CD can be used to upgrade the system software version on the Print Controller X4(AR-PE1) or to reinstall the current version of the system software.

This section describes how to retrieve a backup of the system software (see page 4-46) and how to install system software from the CD (see page 4-47).

Keep in mind the following when installing system software from a CD or when restoring the backup system:

- **Job Log**—The list of jobs in the Job Log and any jobs in the queues are deleted. The network administrator can use Fiery Spooler to save a current list of jobs (not the actual jobs) from the Job Log.
- **Fonts**—All fonts installed on the Print Controller X4(AR-PE1) HDD are deleted. Resident fonts are restored during system software installation. If any additional fonts were downloaded to the Print Controller X4(AR-PE1), the network administrator can reinstall the fonts using Fiery Downloader.

To determine which additional fonts were downloaded to the Print Controller X4(AR-PE1), print the Font List before you install or restore the system software and again after you complete the system software installation. Any fonts *not listed* after installation will need to be reinstalled. See the *Job Management Guide* for more information.

- **Command WorkStation**—If Command WorkStation software is installed on the Print Controller X4(AR-PE1), it will be deleted. After installing or restoring system software, you must reinstall the Command WorkStation. See *Getting Started* for more information.
- **Custom simulations**—Custom simulations and custom outputs saved on the Print Controller X4(AR-PE1) are deleted when you install or restore system software. Save a copy of any custom simulations before installing so they can be restored. See the *Job Management Guide* for more information.
- **Compatibility**—When upgrading the system software make sure the latest user software is installed onto all computers that print to the Print Controller X4(AR-PE1). Using incompatible versions of the system and user software may result in system problems.

# 4

## Service Procedures

### Retrieving backup system software

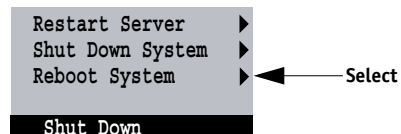
The restore backup function can be used for troubleshooting system problems. When you restore system software the Print Controller X4(AR-PE1) configuration is returned to default settings.

**NOTE:** Do not interrupt the system while the Restore Backup function is in progress. If this occurs you will need to reinstall system software from the CD.

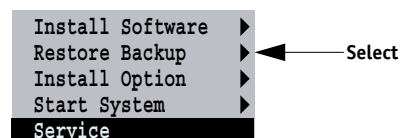
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#### TO RESTORE BACKUP SYSTEM SOFTWARE

1. **If you have not done so already, print the following from the Functions menu (if possible):**
  - Configuration page —records the customer's current Setup configuration  
The Setup configuration will be reset to the default configuration when backup system software is restored.
  - Font List— the Font List details the fonts that are resident on the Print Controller X4(AR-PE1) HDD. Along with the fonts provided, the customer may have installed additional fonts that will be deleted when the backup system software is restored.
2. **Access the Functions menu and then select Reboot System from the Shut Down menu (shown below).**



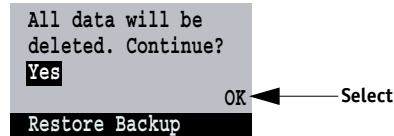
3. **When the diagnostics begin, press the fourth line selection button to access the Service menu.**
4. **Select Restore Backup from the Service menu.**



# 4

## Print Controller X4(AR-PE1) system software service

5. When the following screen is displayed, make sure “Yes” is displayed and then select OK. The restore backup process will begin immediately.



Wait while the Print Controller X4(AR-PE1) Control Panel displays screens that indicate that the software is being restored. After the system software is restored, the Print Controller X4(AR-PE1) will run diagnostics. Once the system is restored, the Idle screen is displayed.

6. **Configure Setup using the Configuration page you printed earlier.**

Bypass settings not included on the Configuration page if it is more appropriate for the network administrator to set them. See the *Configuration Guide* for more information.

7. **Reinstall fonts, Command WorkStation software, or custom simulations that may have been deleted due to system software restoration.**

### Installing system software from a CD

The Print Controller X4(AR-PE1) System Software CD includes the system software and fonts. Use the System Software CD when:

- You replace the Print Controller X4(AR-PE1) HDD
- You upgrade to a more recent version of the system software
- Restore Backup fails

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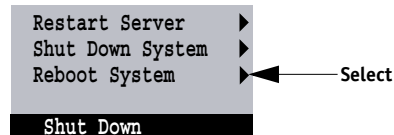
#### TO INSTALL PRINT CONTROLLER X4(AR-PE1) SYSTEM SOFTWARE

1. **If you have not done so already, print the following from the Functions menu (if possible):**
  - Configuration page —records the customer’s current Setup configuration  
The Setup configuration will be reset to the default configuration when system software is installed.
  - Font List— the Font List detail the fonts that are resident on the Print Controller X4(AR-PE1) HDD. Along with the fonts provided, the customer may have installed additional fonts that will be deleted when system software is installed.

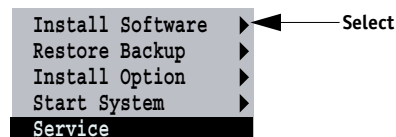
# 4

## Service Procedures

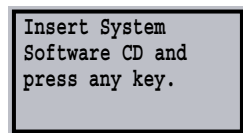
2. Access the Functions menu and then select Reboot System from the Shut Down menu (shown below).



3. When the diagnostics begin, press the fourth line selection button to access the Service menu.
4. Select Install Software from the Service menu.

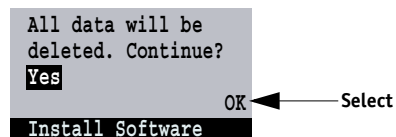


5. At the following screen, press the eject button on the CD-ROM drive and insert the language-specific System Software CD.



If an error message appears, verify that the correct System Software CD is inserted.

6. When the following screen is displayed, make sure "Yes" is displayed and then select OK. The installation process will begin immediately.



Wait while the Print Controller X4(AR-PE1) Control Panel displays screens that indicate that the software is being installed.

# 4

## Print Controller X4 (AR-PE1) system software service

7. **At the message “To complete installation, remove CD and recycle power,” remove the System Software CD and power off and on the system using the power switch on the back panel.**

After the system software is installed, the Print Controller X4(AR-PE1) will initialize the system and will also run diagnostics and create a system backup.

8. **Configure Setup using the Configuration page you printed earlier.**

Bypass settings not included on the Configuration page if it is more appropriate for the network administrator to set them. See the *Configuration Guide* for more information.

9. **Reinstall fonts, Command WorkStation software, or custom simulations that may have been deleted due to system software installation.**





# 5

## The troubleshooting process

### Chapter 5: Troubleshooting

This chapter identifies the source of common problems that may occur with the Print Controller X4(AR-PE1) and suggests ways of correcting them.

### The troubleshooting process

The troubleshooting process is designed to eliminate the most obvious causes of failure before progressing to more complex solutions. “Where problems occur” on page 5-2, gives an overview of the Print Controller X4(AR-PE1) system and indicates areas most likely to require troubleshooting.

- Problems with initial installation

If the Print Controller X4(AR-PE1) fails to complete its initial startup and reach the Idle (ready to print) screen, the most likely cause is a loose cable or board connection. See “Accessing Print Controller X4(AR-PE1) internal components” on page 4-3 for instructions on opening the Print Controller X4(AR-PE1), and “Checking Print Controller X4(AR-PE1) internal connections” on page 4-8 for descriptions of parts and connections.

If a loose part or cable is not the cause of the problem, see “Checking the Print Controller X4(AR-PE1) as a stand-alone unit” on page 5-8, and “Checking the entire Print Controller X4(AR-PE1) system” on page 5-14.

- Try a phone check before you go to the customer site

“Before you go to the customer site” on page 5-3 suggests areas you should check out before making a call to the customer site. With a phone call you can find out if the problem is a simple operating failure or a failure caused by a network or configuration change. You can ask the customer to check for loose cables on the back of the Print Controller X4(AR-PE1) and loose connections at a power strip or outlet.

- Check for obvious causes of problems

“Preliminary on-site checkout” on page 5-5 takes you through the initial checkout when you arrive at the customer site. You should check the Print Controller X4(AR-PE1) internally and externally for the most common problems such as loose cables, connectors, and boards.

- Check the Print Controller X4(AR-PE1) as a stand-alone unit

“Checking the Print Controller X4(AR-PE1) as a stand-alone unit” on page 5-8 describes the checks you should perform on the Print Controller X4(AR-PE1) if the initial checks fail to identify the cause of a problem. With the Print Controller X4(AR-PE1) disconnected from the copier and the network, test the Print Controller X4(AR-PE1) as a stand-alone unit.

This section describes possible startup errors and explains how to run and interpret Print Controller X4(AR-PE1) startup diagnostics.

# 5

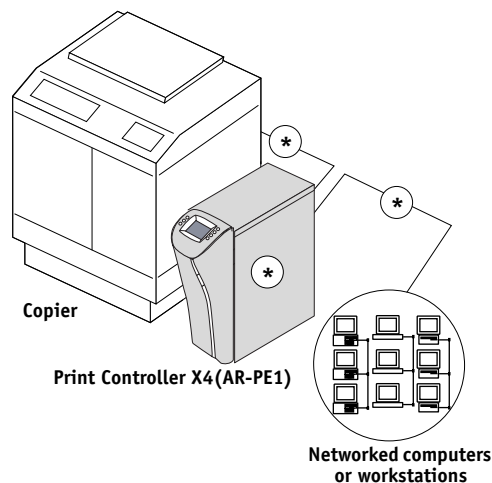
## Troubleshooting

- Check the entire Print Controller X4(AR-PE1) system  
“Checking the copier interface” on page 5-14 explains how to print the Test Page from the Print Controller X4(AR-PE1). “Checking network connections” on page 5-15 includes guidelines for checking the network connections between the Print Controller X4(AR-PE1) and the computers or workstations to which it is connected, and also provides information on printing problems.

### Where problems occur

The Print Controller X4(AR-PE1) is a server for color copiers, and it is generally part of a configuration like the one shown below and in Figure 5-2 on page 5-3. Problems may occur in one of three areas:

- Inside the Print Controller X4(AR-PE1)
- In the interface between the Print Controller X4(AR-PE1) and the copier
- In the interface between the Print Controller X4(AR-PE1) and the workstations or computers to which it is connected

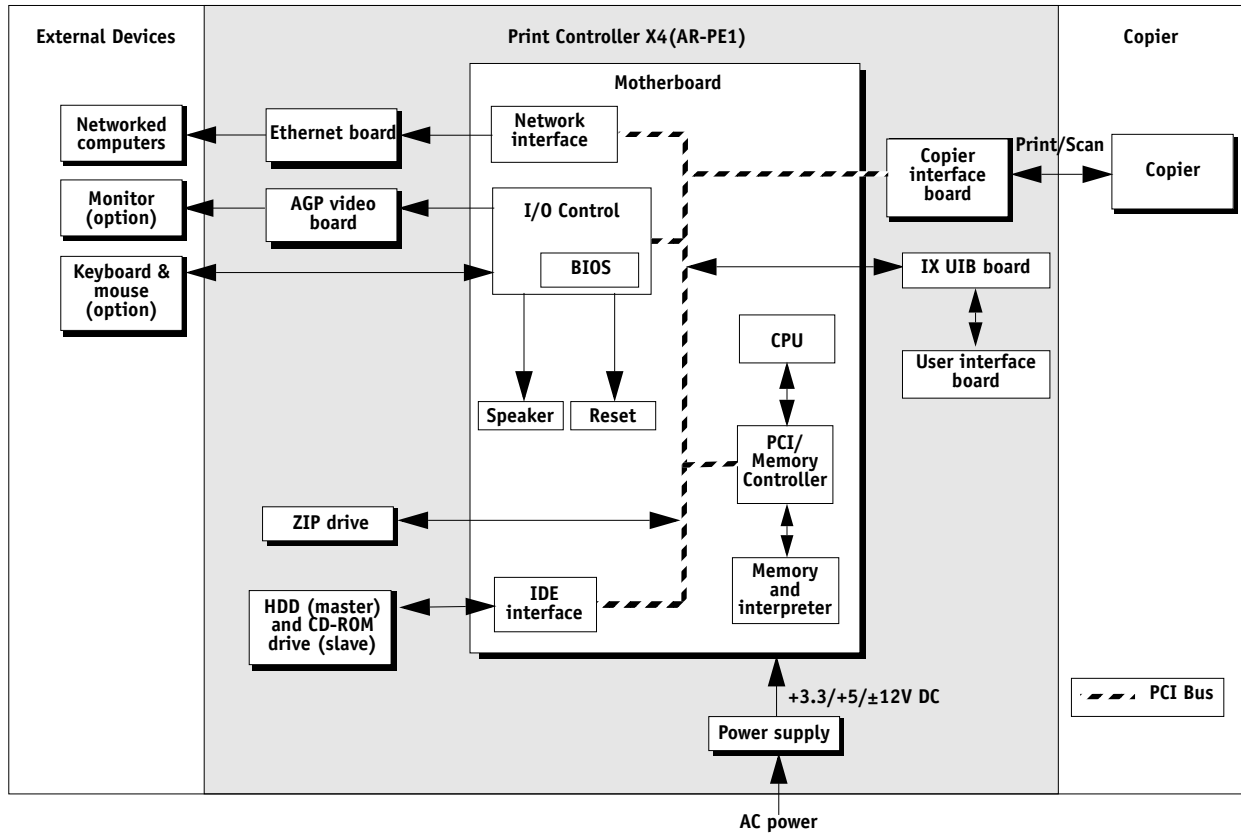


**FIGURE 5-1** Troubleshooting the system

This chapter does not attempt to provide troubleshooting information for attached computers such as PCs or Mac OS computers, for color copiers, or for extensive networks. You should refer problems in these areas to the appropriate service departments and network administrators.

# 5

## Before you go to the customer site



**FIGURE 5-2** Functional diagram of a typical Print Controller X4(AR-PE1) configuration

## Before you go to the customer site

Before you make a service call to a customer site, talk to the customer on the phone and check out the following items:

### 1. Does the copier work when it is not connected to the Print Controller X4(AR-PE1)?

If the copier works but the user cannot print the Print Controller X4(AR-PE1) Test Page, have the customer check the Control Panel on the Print Controller X4(AR-PE1) for an error message.

If the Print Controller X4(AR-PE1) Control Panel reports an error, the customer can check the copier interface cable connections between the Print Controller X4(AR-PE1) and the copier.

# 5

## Troubleshooting

### 2. Is the failure caused by a simple operating problem?

- Is there a printing problem?
  - Does the Print Controller X4(AR-PE1) Test Page fail to print?
  - Does the Print Controller X4(AR-PE1) fail to respond to a print command?
  - Does printing seem to take a long time?
  - Is print quality poor?
  - Does the Print Controller X4(AR-PE1) fail to appear in the list of printers?
- Has the customer noted any error messages on the Print Controller X4(AR-PE1) or the copier screen?

If the answer to any of these questions is yes, refer the customer to a list of Print Controller X4(AR-PE1) error messages in the *Printing Guide*. If the customer has followed the corrective actions in the *Printing Guide* and still fails to solve the problem, be prepared to make a service call. Keep a log of the failures and messages the customer has observed.

### 3. Has the customer made any network changes?

If so, request that the customer's network administrator verify the Print Controller X4(AR-PE1) network requirements. See "Checking network connections" on page 5-15.

### 4. Has the customer added or removed any equipment that might impact the operation of the Print Controller X4(AR-PE1)?

If so, obtain a list of the modifications. This should direct you toward possible problem areas. For example, if the HDD has been replaced, system software may need to be re-installed.

### 5. Is the user having printing problems with a particular image file?

If there are problems with files from particular applications, the user may be more successful using different print settings. The *Job Management Guide* provides print settings for some popular applications. If your preliminary phone call fails to clear up the problem, proceed to the second phase, the preliminary on-site checkout.

# 5

## Preliminary on-site checkout

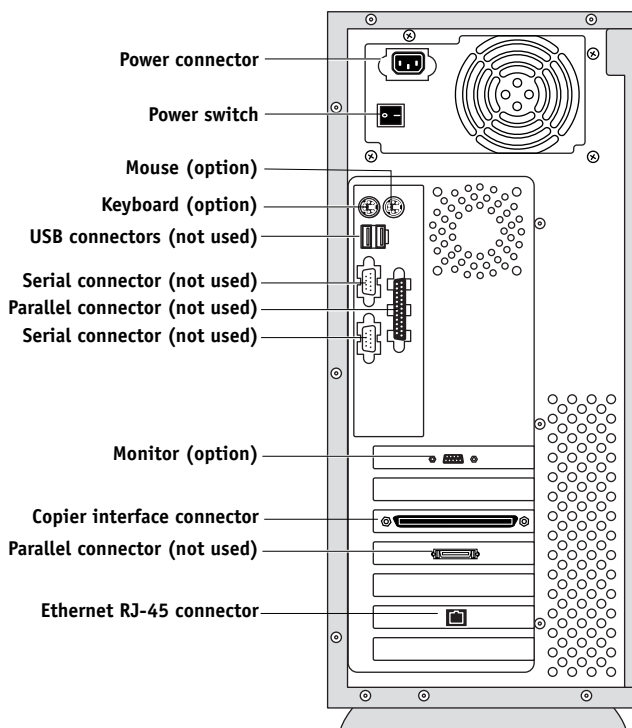
### Preliminary on-site checkout

Your goal in the preliminary on-site checkout is to eliminate obvious problems such as loose or missing cables and connectors, or loosely seated printed circuit boards.

#### Checking interface cables

Before you remove the side and front panel of the Print Controller X4(AR-PE1) to check internal components make sure that:

- All interface cables to the system are plugged into the proper connectors on the back panel of the Print Controller X4(AR-PE1) (see Figure 5-3).
- The power cable is plugged into the wall supply.
- The power switch on the back panel of the Print Controller X4(AR-PE1) is powered on.



**FIGURE 5-3** Back panel of Print Controller X4(AR-PE1)

If all the connectors are properly in place and the power is on, proceed to the next stage of troubleshooting.

# 5

## Troubleshooting

### Checking internal components

To check the internal components you must remove the side and front panel of the Print Controller X4(AR-PE1).



Before you remove the side and front panels of the Print Controller X4(AR-PE1), be aware of the safety precautions you should take when handling the Print Controller X4(AR-PE1), and use ESD precautions when handling printed circuit boards and electronic components. To review the safety precautions, see “Precautions” on page -vii.

Use the guidelines in Chapter 4 when disassembling, checking, and reassembling the Print Controller X4(AR-PE1).

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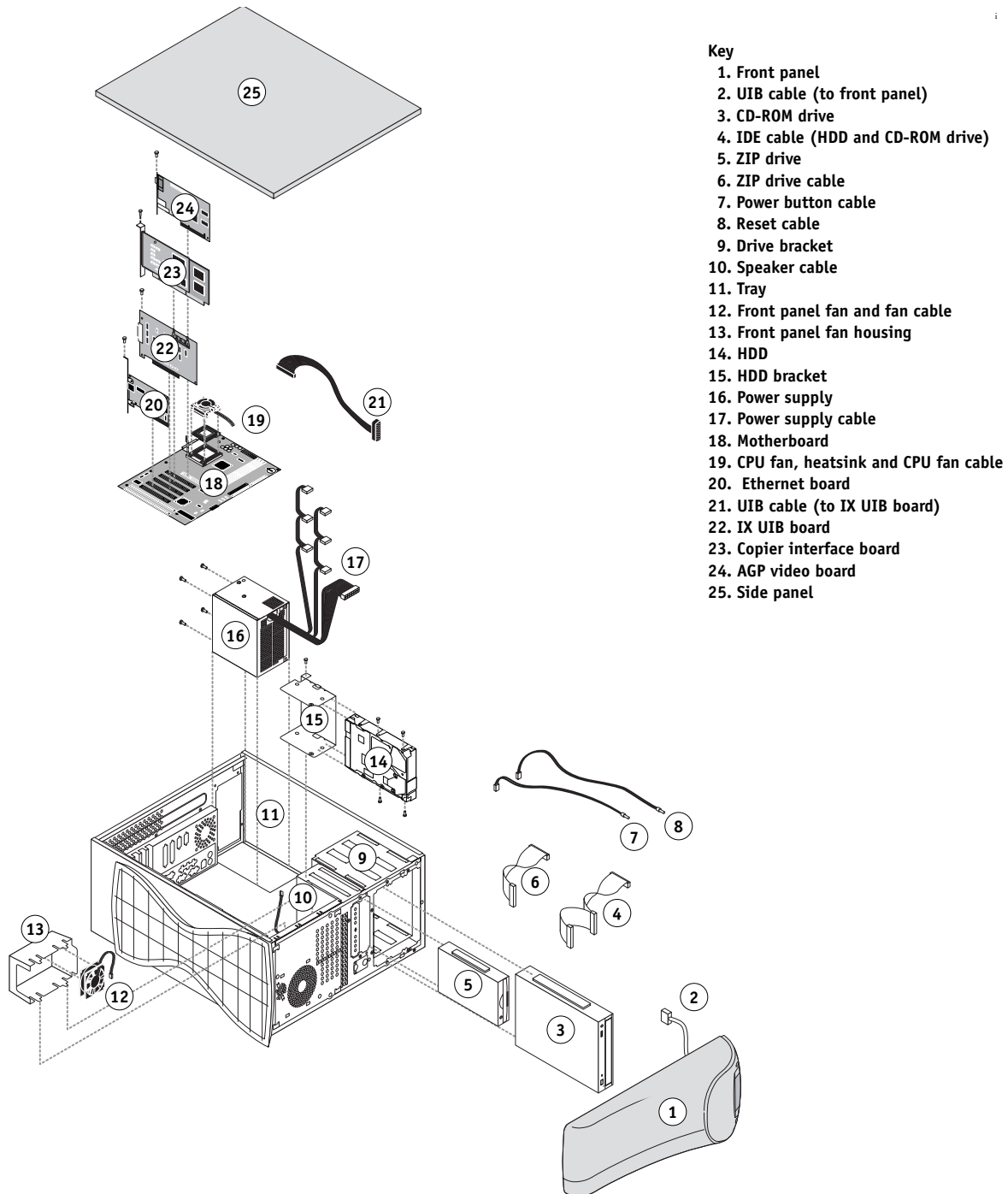
#### TO CHECK INTERNAL COMPONENTS

1. **Power off the Print Controller X4(AR-PE1)** (see “To shut down the Print Controller X4(AR-PE1)” on page 4-3).
2. **Remove the side panel and the front panel** as described in “To open the Print Controller X4(AR-PE1)” on page 4-4 and “To remove the front panel” on page 4-6.
3. **Before you touch any components inside the Print Controller X4(AR-PE1), attach a grounding strap to your wrist and discharge any static electricity on your body by touching the metal cover of the Print Controller X4(AR-PE1).**
4. **Inspect the inside of the Print Controller X4(AR-PE1).** For details, see “Checking Print Controller X4(AR-PE1) internal connections” on page 4-8.

Make sure no foreign materials have been dropped into the tray. Figure 5-4 on page 5-7 shows an exploded view of the system components.

- Look for obviously loose boards and reseat each board securely in its connector on the motherboard.
  - Look for cables that are obviously loose. Reseat each connector firmly.
  - Make sure each connector is properly aligned with its mating connector. If the pins are offset from each other, the board affected will not function properly.
5. **Reassemble the Print Controller X4(AR-PE1) and verify functionality** (see “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11).

# 5 Preliminary on-site checkout



**FIGURE 5-4** Exploded view of Print Controller X4(AR-PE1) components

## Checking the Print Controller X4(AR-PE1) as a stand-alone unit

To test the Print Controller X4(AR-PE1) as a stand-alone unit:

- Disconnect the Print Controller X4(AR-PE1) from the copier and from the network
- Check for possible startup problems
- Check Setup (See the *Configuration Guide* for details)

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### TO ISOLATE THE PRINT CONTROLLER X4(AR-PE1)

1. **Isolate the Print Controller X4(AR-PE1) from the copier and from the network by disconnecting the following cables from their connectors on the back panel of the Print Controller X4(AR-PE1):**
  - Network connector
  - Copier interface connector
2. **Make sure the power cable to the Print Controller X4(AR-PE1) is still in place.**
3. **Power on the Print Controller X4(AR-PE1) and allow the startup diagnostics to run.**



# 5

## Checking the Print Controller X4(AR-PE1) as a stand-alone unit

### Errors and beep codes during startup diagnostics

When you turn on the Print Controller X4(AR-PE1) or reboot, the system performs diagnostic tests that check the motherboard. While the diagnostic tests are running, the name of each test is displayed on the Control Panel. If an error occurs during the startup diagnostics, the red activity light on the Print Controller X4(AR-PE1) Control Panel turns on. At the end of the diagnostics, the red activity light remains on and the error appears on the Control Panel.

Pressing and holding the fourth line selection button during the startup diagnostics displays the Service menu. This screen allows you to reinstall system software if required, recover a backup of the system, and install options (such as the Advanced Controller Interface option).

If the system cannot display the startup diagnostic screen, the Print Controller X4(AR-PE1) will indicate an error with beep codes and a flashing or solid red activity light.

**NOTE:** During startup, the diagnostics check the activity light to make sure it is functional. The activity light on the Print Controller X4(AR-PE1) Control Panel flashed red briefly during this time even though no errors have occurred.

When you encounter any of these conditions, power off the Print Controller X4(AR-PE1) and inspect the inside of the tray for an obviously loose part or cable. Then check the other components as suggested in the following tables. For all service, see “Accessing Print Controller X4(AR-PE1) internal components” on page 4-3. When you are finished, see “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11.

Table 5-1 lists possible beep codes, the area on the motherboard reporting the error, and how to correct the error. Table 5-2 lists the possible error messages that may be reported to the Control Panel and the suggested corrective action.

# 5 Troubleshooting

**TABLE 5-1** Print Controller X4(AR-PE1) beep codes

Beep code	Area reporting the error	Suggested action
1 long beep—pause—2 short beeps	Battery	<ul style="list-style-type: none"> <li>• Replace the battery on the motherboard.</li> <li>• Make sure you reset the time and date in Setup after replacing the battery.</li> </ul>
5 short beeps—pause—1 long beep 6 short beeps—pause—1 long beep	DIMMs	<ul style="list-style-type: none"> <li>• Make sure all DIMMs installed on the motherboard are Electronics For Imaging approved.</li> <li>• Reseat all DIMMs in their sockets and restart the Print Controller X4(AR-PE1) in order to run the startup diagnostics.</li> <li>• If the error persists, replace each DIMM one at a time with a good DIMM until you locate the faulty DIMM(s).</li> <li>• If the above does not correct the error, you may need to replace the motherboard.</li> </ul>
8 short beeps—pause—1 long beep	CMOS settings	<ul style="list-style-type: none"> <li>• Reboot the Print Controller X4(AR-PE1).</li> <li>• If the problem persists, replace the battery on the motherboard.</li> <li>• If the problem still persists, you may need to replace the motherboard.</li> </ul> <p><b>NOTE:</b> If you replace the battery, reset the time and date in Setup after replacing the battery.</p>
9 short beeps—pause—1 long beep 10 short beeps—pause—1 long beep 11 short beeps—pause—1 long beep	DIMMs	<ul style="list-style-type: none"> <li>• Make sure all DIMMs installed on the motherboard are Electronics For Imaging approved.</li> <li>• Reseat all DIMMs in their sockets and restart the Print Controller X4(AR-PE1) in order to run the startup diagnostics.</li> <li>• If the error persists, replace each DIMM one at a time with a good DIMM until you locate the faulty DIMM(s).</li> <li>• If the above does not correct the error, you may need to replace the motherboard.</li> </ul>

**NOTE:** Some beep codes continue to loop until the Print Controller X4(AR-PE1) is powered off and the error is corrected.

# 5

## Checking the Print Controller X4(AR-PE1) as a stand-alone unit

**TABLE 5-2** Possible errors during startup diagnostics

Error message	Suggested action
CMOS Battery Failed	<ul style="list-style-type: none"> <li>Reboot the Print Controller X4(AR-PE1).</li> </ul>
CMOS System Options Not Set	<ul style="list-style-type: none"> <li>If the problem persists, replace the battery on the motherboard.</li> </ul>
CMOS Checksum Error	<ul style="list-style-type: none"> <li>If the problem still persists, you may need to replace the motherboard.</li> </ul>
CMOS Configuration Error	<b>NOTE:</b> Reset the time and date in Setup after replacing the battery.
Keyboard Is Not Functional	<ul style="list-style-type: none"> <li>If the Advanced Controller Interface option is installed, check the keyboard connection to the Print Controller X4(AR-PE1) back panel.</li> <li>If the problem persists after checking connections, replace the keyboard.</li> </ul>
Keyboard Controller is Not Functional	<ul style="list-style-type: none"> <li>If the Advanced Controller Interface option is installed, check the keyboard connection to the Print Controller X4(AR-PE1) back panel.</li> <li>If the problem persists after checking connections, try replacing the keyboard.</li> <li>If the problem still persists, you may need to replace the motherboard.</li> </ul>
CMOS Memory Size Mismatch	<ul style="list-style-type: none"> <li>Reboot the Print Controller X4(AR-PE1).</li> <li>If the problem persists, replace the battery on the motherboard.</li> <li>If the problem still persists, you may need to replace the motherboard.</li> </ul> <b>NOTE:</b> Reset the time and date in Setup after replacing the battery.
Cache Memory Error	<ul style="list-style-type: none"> <li>Replace the motherboard.</li> </ul>
Hard Disk Error	<ul style="list-style-type: none"> <li>Check IDE cable connections to the HDD and the CD-ROM drive.</li> <li>If the problem persists, disconnect the IDE cable from the CD-ROM drive and power on the system.</li> <li>If the error does not occur with the CD-ROM drive disconnected, replace the CD-ROM drive.</li> <li>If that does not correct the problem, try replacing the HDD.</li> <li>If the problem still persists, you may need to replace the motherboard.</li> </ul>
CDROM Error	<ul style="list-style-type: none"> <li>Check cable connections to the CD-ROM drive.</li> <li>If the problem persists, replace the CD-ROM drive.</li> <li>If the problem still persists, try replacing the motherboard.</li> </ul>
CMOS Time Not Set	<ul style="list-style-type: none"> <li>Reboot the Print Controller X4(AR-PE1).</li> <li>If the problem persists, replace the battery on the motherboard.</li> <li>If the problem still persists, you may need to replace the motherboard.</li> </ul> <b>NOTE:</b> Reset the time and date in Setup after replacing the battery.
Cache Memory Error	<ul style="list-style-type: none"> <li>Replace the motherboard.</li> </ul>
Error xxx At yyy	<ul style="list-style-type: none"> <li>If this error is displayed call Electronics For Imaging.</li> </ul>

# 5 Troubleshooting

## General Print Controller X4(AR-PE1) system error conditions

When you startup the Print Controller X4(AR-PE1) or when you install system software, you may encounter error conditions that are not reported during the startup diagnostics. Table 5-3 lists some of these error conditions and suggests corrective action.

When you first encounter any of these error conditions, power off the Print Controller X4(AR-PE1) and inspect the inside of the tray for an obviously loose board or cable. Then check other components as suggested below. For service, see “Accessing Print Controller X4(AR-PE1) internal components” on page 4-3. When you are finished, see “Restoring Print Controller X4(AR-PE1) functionality after service” on page 4-11.

**TABLE 5-3** General Print Controller X4(AR-PE1) system error conditions

Symptom	Probable cause	Suggested action
No fan sound and Print Controller X4(AR-PE1) does not start up.	Power supply cable connections are faulty or disconnected.	<ul style="list-style-type: none"> <li>• Check power supply cable connections to the motherboard, CD-ROM drive, CPU fan, HDD, and ZIP drive.</li> <li>• Check all cable connections and board connections.</li> </ul>
	Power supply has failed.	<ul style="list-style-type: none"> <li>• Replace the power supply.</li> </ul>
No fan sound, but the Print Controller X4(AR-PE1) starts up properly.	Problem with the front panel fan.	<ul style="list-style-type: none"> <li>• Check the front panel fan cable connection to motherboard connector CFAN.</li> <li>• If the problem persists, replace the front panel fan.</li> </ul>
Buttons do not work on the Control Panel.	Connection to the front panel is faulty.	<ul style="list-style-type: none"> <li>• Check the UIB cable connections to the front panel and IX UIB board. Also check the UIB cable connection at the front of the tray.</li> </ul>
	Connection to the IX UIB board is faulty or the IX UIB board has failed.	<ul style="list-style-type: none"> <li>• Check the connection between the motherboard and IX UIB board.</li> <li>• Check the connection between the two segments of the UIB cable at the front of the tray.</li> <li>• Check the connection between the UIB cable and the front panel.</li> <li>• If the problem persists, replace the IX UIB board</li> </ul>
	Faulty IX UIB board.	<ul style="list-style-type: none"> <li>• Replace the front panel.</li> </ul>
	Problem with the BIOS chip installed on the motherboard.	<ul style="list-style-type: none"> <li>• Call your authorized service/support center.</li> </ul>

# 5

## General Print Controller X4(AR-PE1) system error conditions

**TABLE 5-3** General Print Controller X4(AR-PE1) system error conditions (Continued)

Symptom	Probable cause	Suggested action
Nothing appeared on the Control Panel when the Print Controller X4(AR-PE1) was turned on or the backlighting on the Control Panel is discolored.	UIB cable connection to the front panel is faulty.	<ul style="list-style-type: none"> <li>Check the UIB cable connections to the front panel and IX UIB board. Also check the UIB cable connection at the front of the tray.</li> </ul>
	Connection to the IX UIB board are faulty or the IX UIB board has failed.	<ul style="list-style-type: none"> <li>Check the connection between the motherboard and IX UIB board.</li> <li>If the problem persists, replace the IX UIB board</li> </ul>
	Faulty UIB board.	<ul style="list-style-type: none"> <li>Replace the front panel.</li> </ul>
Hanging at the EFI logo when powered on.	Print Controller X4(AR-PE1) system software is corrupted or not installed on the HDD.	<ul style="list-style-type: none"> <li>Restore the system software backup using the Restore Backup function from the Service menu.</li> <li>If the problem persists, install system software from the CD.</li> </ul>
“Loading...” hangs on the Control Panel.	Print Controller X4(AR-PE1) system software is corrupted or not installed on the hard disk drive.	<ul style="list-style-type: none"> <li>Restore the system software backup using the Restore Backup function from the Service menu.</li> <li>If the problem persists, install system software from the CD.</li> </ul>
	Cable connections to the HDD are loose or faulty.	<ul style="list-style-type: none"> <li>Check cable connections to the HDD.</li> <li>If the problem persists, you may need to replace the IDE cable or the HDD.</li> </ul>
Startup diagnostics continue to run.	HDD is not installed properly.	<ul style="list-style-type: none"> <li>Check cable connections to the HDD.</li> <li>If the problem persists, you may need to replace the HDD.</li> </ul>
Check power & cable appears in the Print Controller X4(AR-PE1) Control Panel.	Problem with the connection between the Print Controller X4(AR-PE1) and the copier.	<ul style="list-style-type: none"> <li>Make sure the copier interface cables are connected to the Print Controller X4(AR-PE1) and the copier.</li> <li>Power the Print Controller X4(AR-PE1) and the copier off and then power them back on again.</li> <li>Print a Test Page.</li> <li>If this does not correct the problem, you may need to replace the copier interface cables.</li> </ul>
	Copier is not turned on when trying to print.	<ul style="list-style-type: none"> <li>Power on the copier and print a Test Page.</li> </ul>
	Faulty copier interface board.	<ul style="list-style-type: none"> <li>Run Test I/F board from the Functions menu.</li> <li>If the diagnostics indicate that the copier interface board is bad, replace the board.</li> </ul>
Cannot find bootable media is displayed on the Print Controller X4(AR-PE1) Control Panel.	System software is corrupted on the HDD.	<ul style="list-style-type: none"> <li>Reinstall system software.</li> </ul>

# 5

## Troubleshooting

### Checking the entire Print Controller X4(AR-PE1) system

This phase of troubleshooting deals with problems with the entire system. These procedures should be run after verifying that the Print Controller X4(AR-PE1) functions properly as a stand-alone unit.

### Checking the copier interface

After the Print Controller X4(AR-PE1) starts up successfully as a stand-alone unit, power off the Print Controller X4(AR-PE1) and connect the copier interface cables. Make sure the Print Controller X4(AR-PE1) is working properly with the copier before you connect it to the network. See “Connecting to the copier” on page 3-3.

### Printing the Print Controller X4(AR-PE1) Test Page

Before connecting the Print Controller X4(AR-PE1) to the network, print the Test Page to verify that the Print Controller X4(AR-PE1) is connected properly to the copier. The Test Page is a color file that resides on the Print Controller X4(AR-PE1) hard disk drive.

---

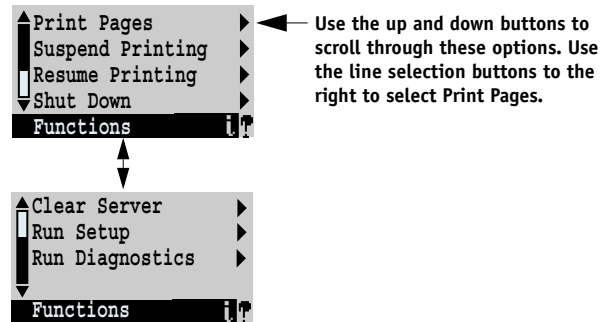
#### TO PRINT A TEST PAGE FROM THE CONTROL PANEL

1. **Power on the copier and allow it to warm up.**
2. **Power on the Print Controller X4(AR-PE1) from the power switch on the back panel.**  
Messages appear on the Control Panel as the Print Controller X4(AR-PE1) runs through its diagnostics.
3. **Before proceeding, make sure that the copier is not in use. The Print Controller X4(AR-PE1) Info screen should read Idle.**

# 5

## Checking the entire Print Controller X4(AR-PE1) system

4. At the Idle screen, press the menu button once (see “Using the Control Panel” on page 3-8). The Functions menu is shown below:



5. Press the line selection button to the right of Print Pages and then select Test Page.

The Print Controller X4(AR-PE1) sends the Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.

6. Examine the quality of the Test Page from the copier.

The Test Page confirms that the Print Controller X4(AR-PE1) print engine is functional and that the connection with the copier is good.

## Checking network connections

After the Print Controller X4(AR-PE1) is connected to networked computers, printing problems may arise if the network hardware or software is not set up properly or does not match network settings on the Print Controller X4(AR-PE1). Problems may also arise when printing from a specific application or printing a particular file.

Most of these problems show up as printing problems, and do not necessarily indicate a Print Controller X4(AR-PE1) malfunction. The customer's network administrator can eliminate many printing problems without requiring you to make a service call. The network administrator deals with:

- Copier error conditions
- Network connection problems that result in the Print Controller X4(AR-PE1) not appearing in the printer list on the customer's workstation

**NOTE:** If the Print Controller X4(AR-PE1) does not appear in the list of printers on the network, there may be another device on the network with the same Ethernet address.

- Conflicting network settings in Setup and on the customer's workstation
- Printing problems caused by the inappropriate Setup options
- Application-specific printing errors caused by missing or incorrectly placed printer description files

# 5

## Troubleshooting

### Printing to the Print Controller X4(AR-PE1)

If the user can print the Print Controller X4(AR-PE1) Test Page, but cannot print a job from a computer on the network, you may have to make a service call. However, first make sure the network administrator has:

- Checked all components of the network including cables, connectors, terminators, network adapter boards, and network drivers
- Activated the network and used it to communicate with other printers
- Checked the corrective actions listed in the *Printing Guide*
- Confirmed that the applicable network settings in Setup (such as AppleTalk zone, IP address, Subnet mask, and Gateway address) match the settings used in the network

When you make a service call, check the back panel of the Print Controller X4(AR-PE1) to make sure that the appropriate network connections are in place.

Intermittent print quality and color quality problems are difficult to trace. Before you try to troubleshoot print quality problems, copy a color test page to make sure that the copier itself does not need servicing or adjusting.

**NOTE:** EPS file generation is not completely standardized among applications. Some users may encounter problems while printing certain EPS files.





## Appendix A: Specifications

This chapter provides an overview of Print Controller X4(AR-PE1) features.

### Hardware features

- CPU—433MHz
- Memory—192MB
- 8.4GB hard disk drive (minimum)
- Built-in CD-ROM drive and ZIP drive
- Battery—3V manganese dioxide lithium coin cell (Panasonic CR2032 or equivalent)

### Networking and connectivity

- Supports AppleTalk, TCP/IP, and IPX protocols simultaneously
- Supports EtherTalk Phase 2
- Ethernet network board installed
- Optional Token Ring board

### User software

A complete description of Print Controller X4(AR-PE1) user software is provided in the *Printing Guide*. For optimal Print Controller X4(AR-PE1) performance, current versions of the user software should be maintained on every network computer that might print to the Print Controller X4(AR-PE1).

### Safety and emissions compliance

The Print Controller X4(AR-PE1) has been certified to meet or surpass the following government standards:

#### Safety approvals

- UL 1950
- CSA 22.2 #950
- EN 60950 (TUV/GS mark)
- CB scheme IEC 950

#### EMC approvals

- FCC Class A
- VCCI Class A
- EN 55022 Class A
- EN 55024 Class A
- AS/NZS 3548 Class A

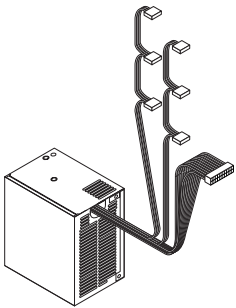

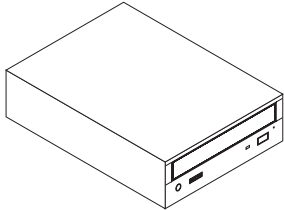
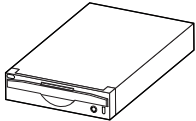
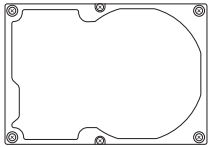


# B Spare parts overview

## Appendix B: Parts List

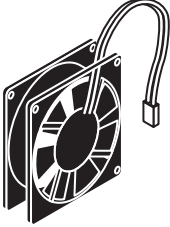
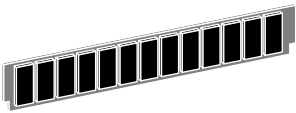
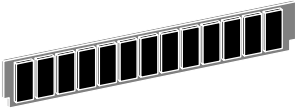
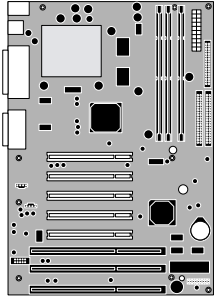
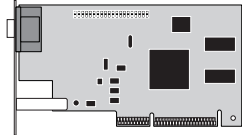
This appendix provides part numbers for Print Controller X4(AR-PE1) components. Refer to the table and the illustrations below to locate a particular component.

### Spare parts overview

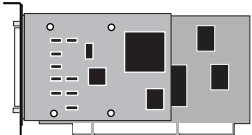
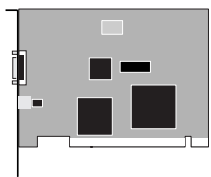
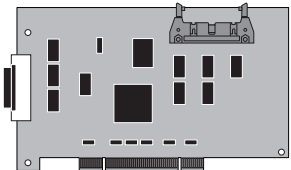
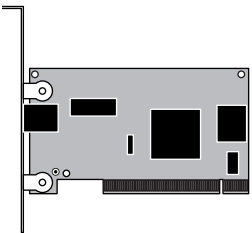
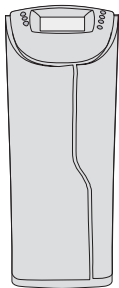
Part	EFI part number	Additional page references
Power supply	45010451	Page 4-35
		
Power cable	10015459	Page 3-1
		
Internal IDE CD-ROM drive	45008210	Page 4-41
		
Internal ZIP drive	45008212	Page 4-43
		
8.4GB IDE hard disk drive	45008936	Page 4-38
		

# B

## Parts List

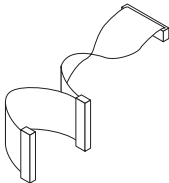
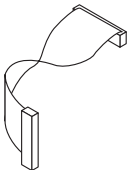


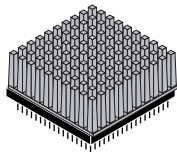
Part	EFI part number	Additional page references
Front panel fan	45010540	Page 4-32
		
64MB DIMM	45005706	Page 4-26
		
128MB DIMM	45008230	Page 4-26
		
Motherboard	45011253	Page 4-21
		
AGP video board	45008200	Page 4-13
		

# B Spare parts overview

Part	EFI part number	Additional page references
<b>Copier interface board</b> 	45010994	Page 4-15
<b>Token Ring board</b> 	45008202	See <i>Using the Token Ring kit</i> for information.
<b>IX UIB board</b> 	45008198	Page 4-17
<b>10/100BaseT Ethernet board</b> 	45010938	Page 4-19
<b>Front panel</b> 	45010995	Page 4-6

# B

## Parts List

Part	EFI part number	Additional page references
<b>IDE cable</b> 	45010538	Page 4-38 and Page 4-41
<b>ZIP drive cable</b> 	45008226	Page 4-43
<b>UIB cable</b> 	45010537	Page 4-17
<b>Base BIOS chip</b> 	45008481	Page 4-29
<b>433MHz CPU</b> 	45010435	Page 4-28
<b>Magnetic Optical drive</b>	45010991	—

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